

COAL AGE

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No. 2

Facts and Figures

The year 1913 was the greatest period ever experienced in the coal-mining industry. The output reached a total of 562,000,000 short tons which compares with a production of 534,000,000 tons in 1912.

Not only did the output exceed all previous records, but the value of the product at the mines was \$753,000,000, an increase of 8.4 per cent. over the preceding year.

Bituminous production increased 22,000,000 tons, while the anthracite output was 5,600,000 greater than in the previous twelve months

Coke increased 2.8 million tons in output, reaching a total of 45,000,000. The value of this tonnage at the ovens was \$135,000,000, an increase of 26 per cent. over the value of the 1912 production. Therefore in both quantity and price, coal and coke figures in 1913 established a new record.

The principal states to show increases in coal production were, Alabama, Illinois, Indiana, Kentucky, Ohio, Pennsylvania and West Virginia. Colorado showed a decrease in output caused by a serious strike that still exists in that state. Maryland also showed a small decrease due principally to some confusion resulting from recently enacted laws regulating child labor and providing for workmen's compensation. It is likely, however, that the Maryland field has reached its stage of maximum production.

The increased coke tonnage came principally from West Virginia and Alabama. The Pennsylvania output, although exceeding any previous year, was cut down by the slump that occurred in November and December. Alabama, also, would have made a better showing had it not been for the war in Mexico. This latter country is one of Alabama's best markets.

The most noteworthy event of the year in

coal mining, was the national movement to reduce accidents and improve working conditions. Every manager, superintendent and foreman of any consequence, is striving to give his mine a clean slate in the matter of fatalities. Our greatest trust, the steel corporation, is without doubt the most ambitious aspirant for honors in the campaign for safety.

The outlook for 1914 in the coal industry would be better than any time in recent years were it not for the expiration of wage agreements in the bituminous field on April 1. The miners are instructing their delegates to insist on a "mine-run" basis, which demand the operators will surely refuse to consider. The action of the Ohio commission in approving the "mine-run" basis of payment will encourage the men and weaken the case of the owners.

Taking it all in all, the prospect for peace in the bituminous regions this spring is not favorable unless great forbearance is exercised by the two contending factions. The union in Central Pennsylvania has not relished the action of the operators in making public the frequent violations of the Scale Agreement by the men, and although the owners have temporarily insured better conditions by calling their employees to account, they have added fuel to the flames that may break out after April 1.

"It's an ill wind that blows no one good," and of course the anthracite mines and the West Virginia operations would profit by the misfortunes of the soft-coal owners in the unionized fields, should a lengthy suspension occur. However, it is best to remember that what hurts one part of the industry is also harmful to the business as a whole.

Let us all pray for peace in 1914. That accomplished, we will have the most prosperous year in history.

Reviews of Coal Mining for 1913

By B. M. STARNES*

Reports from state mine inspectors and special correspondents, giving estimates of the year's production and the outlook for 1914.

Alabama*

SYNOPSIS—Alabama coal production increased a million tons. Accidents materially reduced and but one explosion during the year. Trade and market conditions were exceptionally good. Car supply inadequate throughout the year. Water transportation from Alabama to the Gulf was opened and considerable new development carried through.

The coal mines of Alabama during 1913 produced 17,500,000 tons of coal, breaking all previous records by over a million tons of coal. Had the operators not been handicapped by a serious car shortage, and had business during the last two months held up the production would have been at least 18,500,000 tons, as it is estimated that a million tons were lost by these two causes alone. This will put Alabama in sixth place among coal-producing states of the Union.

Alabama has produced since 1870, which is as far back as the records go, the following tonnage of coal, coke and pig iron:

| | Coal | Coke | Pig Iron |
|-------|------------|-----------|-----------|
| 1870 | 13,200 | ..... | 11,171 |
| 1880 | 380,000 | 60,781 | 68,925 |
| 1890 | 4,090,409 | 1,072,942 | 816,911 |
| 1900 | 8,273,363 | 2,110,837 | 1,184,337 |
| 1910 | 16,139,228 | 3,231,399 | 1,939,141 |
| 1911 | 15,011,853 | 2,756,697 | 1,696,999 |
| 1912 | 16,513,040 | 2,881,861 | 1,832,146 |
| 1913† | 17,500,000 | 3,500,000 | 2,018,343 |

* For 1872. † Estimated.

The number of nonfatal accidents in the Alabama mines during 1913 is approximately 133, which is about 15 per cent. less than in 1912. The fatal accidents for the year number 120, which is one less than the previous year. Below is a comparison of accidents in recent years:

| Year | Fatal | Nonfatal | No. Employees per Life Lost | Tons per Life Lost |
|------|-------|----------|-----------------------------|--------------------|
| 1900 | 37 | 13 | 386 | 223,603 |
| 1910 | 238 | 48 | 92 | 67,812 |
| 1911 | 209 | 90 | 108 | 71,827 |
| 1912 | 121 | 153 | 193 | 136,471 |
| 1913 | 120 | 133 | 206 | 147,060 |

There was only one mine explosion during the year, that at the Acton mine of the Alabama Fuel & Iron Co. in November, in which 24 men lost their lives. The Government has placed at the Birmingham rescue station the only automobile ambulance and rescue car in the United States, and it has proved of great value in this work. Conditions at the mines for the safety of the men are improved vastly over last year, and the operators are giving more time and attention to "Safety First" than ever before.

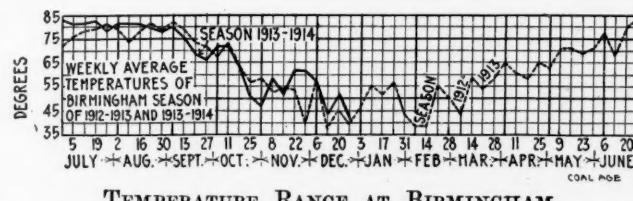
MARKET CONDITIONS

Steam and Domestic Coal—During the winter and early spring of 1913, the market on all grades of coal was exceedingly good, though lump coal was slightly under the average in tonnage due to a rather warm winter. The spring business beginning with Apr. 1 was excellent, the usual heavy tonnage of lump coal moving. The operators

*Sloss Sheffield Steel & Iron Co., American Trust Building
Birmingham, Ala.

we were looking for a rather quiet summer, but they were agreeably surprised, for 1913 will long be remembered as one of the best summers in the coal business in Alabama. Prices on all grades held up, and a heavy tonnage was moved. During the first six months over 10 million tons were handled. The great surprise of the year was the tendency of the market to lag during early fall, which is not usual in this district; it continued getting worse and worse, until there was practically no market whatever at the close of the year. Of course the usual contracts were made, but a large portion of Southern consumers prefer to buy on the open market as they need the coal, and it is this class of trade that seems to have dropped out of sight. The usual holiday-rush business failed to make its appearance, but the steam coals held their own in fair shape.

Blacksmith Coal—The producers of blacksmith coal enjoyed a good business, at prices from \$2@2.25 per ton during the entire year. The tonnage was large during the winter and spring, falling off slightly in the summer, but



recuperating as winter drew near. Prices have been about normal, and the operators are content.

Furnace and Foundry Coke—The market on both furnace and foundry coke for 1913 has been a disappointment, for while the prices have held up well, the demand has been far under the expectations of the manufacturers. It is true that a larger tonnage was produced than ever before, but most of this increased tonnage went into the manufacture of iron by the makers themselves. The Mexican situation has cut Alabama from a profitable territory, as usually a large tonnage of coke is shipped to the Mexican smelters. The market conditions for the year could only be classed as fair.

PRICES, LABOR AND TRANSPORTATION CONDITIONS

Below is a schedule of prices f.o.b. mines for the year on two of the standard lump coals of the district. Due to the unfavorable conditions, these prices have been cut materially during the latter part of 1913, though during the first nine months they were rigidly adhered to.

| | Cahaba Lump ¹ | Cahaba Nut ² | Carbon Hill Lump ¹ | Carbon Hill Nut ² |
|----------------|-----------------------------|----------------------------|----------------------------------|---------------------------------|
| January..... | \$ 3.00 | \$ 2.50 | \$ 2.25 | \$ 1.90 |
| February..... | 3.00 | 2.50 | 2.25 | 1.90 |
| March..... | 2.50 | 2.00 | 1.75 | 1.45 |
| April..... | 2.50 | 2.00 | 1.75 | 1.45 |
| May..... | 2.60 | 2.10 | 1.85 | 1.55 |
| June..... | 2.70 | 2.20 | 1.90 | 1.60 |
| July..... | 2.80 | 2.30 | 1.95 | 1.65 |
| August..... | 2.90 | 2.40 | 2.00 | 1.70 |
| September..... | 3.00 | 2.50 | 2.15 | 1.75 |
| October..... | 3.00 | 2.50 | 2.25 | 1.95 |
| November..... | 3.25 | 2.75 | 2.25 | 1.90 |

¹ Over 6-in. screen. ² From 3 in. to 6 in. ³ From 2 in. to 6 in.

Prices on Steam Coal—Approximate prices obtained on a few of the standard steam coals f.o.b. mines were:

| | |
|-------------------------------|--------------|
| Pratt run of mines..... | \$1.25@ 1.45 |
| Big seam run of mines..... | 1.00@ 1.10 |
| Calaba run of mines..... | 1.30@ 1.45 |
| Black Creek run of mines..... | 1.35@ 1.50 |
| Washed slack..... | 1.20@ 1.30 |
| Unwashed slack..... | 0.30@ 0.60 |

Blacksmith Coal and Coke f.o.b. mines were about as follows:

| | |
|----------------------|--------------|
| Blacksmith coal..... | \$2.00@ 2.25 |
| Furnace coke..... | 2.75@ 3.50 |
| Foundry coke..... | 3.50@ 4.25 |
| Coke breeze..... | 1.50@ 2.00 |

Car Supply—This district has suffered severely from a serious car shortage during the entire year. Even during the summer months, the railroads were not able to supply sufficient equipment to enable the operators to run regularly; in some cases the mines worked only from one-third to one-half time. The dull market during the last three months has aided the roads in this respect, but, should the usual winter trade develop after the holidays, the railroads will not be able to cope with the situation. It is estimated by the coal operators of this district that the production was restricted by over 500,000 tons by the lack of cars.

Labor Situation—Alabama has had no labor troubles this year. Many of the large operators have voluntarily



CHARLES H. NESBITT, ALABAMA

increased wages to all employees, and, as the mines have been almost constantly at work, it has kept the labor in this district well satisfied.

Water Transportation—The dream of the coal operators in this district—water transportation from Birmingham to the Gulf—has at last come true. The Alabama & New Orleans Transportation Co. is now operating barges from Tuscaloosa, Ala., down the Warrior River to Mobile and New Orleans. While it has not yet proved a decided success, owing to the low water and the unfinished lock, still, within the next year, Alabama will see at least 500,000 tons of coal barged to the Gulf, at a much lower cost than by rail.

IMPROVEMENTS

Some of the principal improvements by coal companies during the past year are as follows:

Central Iron & Coal Co., at Holt, constructed 40 byproduct coke ovens, of the Semet-Solvay type.

COAL AGE

Alabama Co. reopened its Searles mines, which had been closed down for about a year. They are now operating on a capacity of 1000 tons per day.

American Steel & Wire Co.'s wire and nail mill, at Fairfield, put into operation.

Tennessee Coal, Iron & R.R. Co. announced that it would build a new furnace and steel converter at Ensley, at a cost of \$200,000.

Sloss Shefford Steel & Iron Co. relined the Philadelphia furnace, Florence, Ala.

United States Steel Corporation announces that it will build an ore-unloading plant at Mobile, at a cost of \$800,000 to receive its Cuban ores.

Sloss Shefford Steel & Iron Co. opened nine new mines at Drifton, Brookside, Dora, Cardiff and Blossburg.

Pratt Consolidated Coal Co. built a new washer and tipple at the Banner mines, concrete and steel structure.

Sloss Shefford Steel & Iron Co. opened nine new mines at Top.

Tennessee Coal, Iron & R.R. Co. opened up its Bay View mine and announced that they would open up a new mine at Bloston on the Woodstock seam.

Bessemer Coal & Iron Co. installed a new washer at Aldrich, Ala.

Red Eagle Coal Co. opened up a new mine at Bloston.

American Coal Corporation developed its Beltona mines near Warrior, Ala., at an expenditure of \$400,000. Now operating and getting out 600 tons per day.

Alabama Consolidated Coal & Iron Co. properties transferred to the Alabama company.

Southern Iron & Steel Co. sold to the Gulf States Steel Co.

G. B. McCormack and Erskine Ramsay announce that they would build a battery of byproduct coke ovens with a capacity of 1500 tons of coke daily.

Sloss Shefford Steel & Iron Co. announce it will build a battery of 300 beehive ovens at Bessie.

Bessemer Coal & Land Co. purchased the properties of the Montevallo Mining Co.

Yolande Coal & Coke Co. purchased the Abernant Coal Co.

Bessemer Coal, Iron & Land Co. purchased 40,000 acres of land in Fayette County, said to contain a high-grade coal.

Pierce Coal & Lumber Co. developing 20,000 acres of coal lands in Jackson County.

Panama Coal Co. announced that it would develop 15,000 acres of coal lands in the Sipsey Valley.

Alabama Fuel & Iron Co. opened up its No. 4 Marguerite mine at Marguerite.

Central Cahaba Coal Co. opened up a new mine at West Blocton.

Frisco R.R. built a 12-mile spur, tapping the coal fields of Walker County, known as Sipsey Valley, thus opening up a large territory rich in coal.

NEW INCORPORATIONS

The following are the principal new incorporations during the year:

C. B. Stalnacker and associates, of Jasper, developing a tract containing a 9-ft. seam near Jasper.

Gas Light Coal & Coke Co. To develop 2000 acres of coal at Dulin.

West Pratt Coal Co. Capital, \$100,000. John Armstead, president. To develop coal lands at Dora.

Morris Coal Co. W. F. Francis, president. To develop 2000 acres near Morris.

Little River Mining Co. To develop 7500 acres in north Alabama.

Maryland Coal & Coke Co. To develop 15,000 acres of coal lands in the Sipsey Valley. Now operating and getting out 800 tons per day Black Creek coal.

Eureka Coal Co. To develop tract of coal land at Fallston.

Blount Mountain Coal & Lime Co. To develop tract of land in Blount County.

Nunley Ridge Coal Co. Capital, \$24,000. R. D. Curry, president.

GENERAL NOTES

The Acmar mine, of the Alabama Fuel & Iron Co., will lead the mines of this state in tonnage for 1913 with

approximately 460,000 tons. The Sayreton mine of the Republic Iron & Steel Co. will follow with an output of approximately 440,000 tons. It is estimated that there are 24,014 miners in Alabama.

It is rumored that the Southern Ry. is to purchase the Gulf, Florida & Alabama R.R., which owns extensive terminals in Pensacola, Fla. This line is building from Pensacola to Jasper, Ala., the center of the coal fields, at which point it will connect with the Southern, and thus give the latter a direct connection with the export trade at Pensacola.

It is also rumored that the Central of Georgia will build through Milton, Fla., to Pensacola, and, as this road is owned by the Illinois Central, which penetrates the coal district of Alabama, Pensacola will thus have another coal railroad; at the present time, the only line into Pensacola by which coal can be shipped is the Louisville & Nashville. With three roads, Pensacola would be a great bunkering point on the Gulf.

Alaska

Sumner S. Smith, U. S. mine inspector for Alaska, reports to us that mines are few in that territory, and only a small tonnage of coal has ever been produced.

"During the past season," he says, "some 1600 tons were mined from the Wharf property, near Seldovia, on the south coast of Kachemak Bay of the Kenai Peninsula. The coal is lignitic. A few tons may have been mined on Chicago Creek, near Candle, but Mr. Smith is not certain. Candle is located on the west coast of Alaska a half a degree south of the Arctic Circle, on Kotzebue Sound.

Eight hundred tons, as will be seen in another part of this issue, were produced for the use of the navy on the Chickaloon River, a branch of the Matanuska.

This tonnage, however, is doubtless yet at the mine and it is questionable whether the weather conditions will permit it to be shipped to tidewater this winter.

Arkansas

By THOMAS H. SHAW*

SYNOPSIS—The coal in Arkansas is of excellent quality and sells for a good price. Its presence has been known since 1818. The labor situation in 1913 has been complicated by a disagreement over the interpretation of a contract signed with the union.

In reviewing the coal-mining industry of Arkansas for 1913, it will not be possible for me to give the exact figures as to coal production, number of employees, number of days worked, etc., for the calendar year ending Dec. 31, 1913. This is due to the fact that the state law requires all statistical data relating to the coal-mining industry to be collected for the fiscal year ending June 30.

The area of the coal regions is about 2000 square miles, comprising six counties, viz.: Sebastian, Scott, Franklin, Johnson, Logan and Pope. The counties producing the largest amount of coal are Sebastian, Franklin and Johnson.

EARLY MINING HISTORY

Coal in this state was given its first written notice in 1818. The first opening deserving mention was the old

*State mine inspector, Midland, Ark.

Spadra mine, located at the mouth of Spadra Creek, in Johnson County, where a steam plant was in operation about the year 1870. Mining was carried on at Ouita in Pope County in 1873. About this date, country banks were opened on Massard prairie not far from Fort Smith and on Long prairie near Jenny Lind, which produced collectively about 8000 tons per annum and which was hauled to Fort Smith in wagons. About the year 1887 the Western Coal & Mining Co. and the Kansas & Texas Coal Co. commenced extensive mining operations at Jenny Lind, Hackett and Huntington. The production increased to 1,900,000 tons per annum from 1900 to 1906.

PRODUCTION OF FISCAL YEAR

The production reported for the fiscal year ending June 30, 1913, was 1,952,461.93 tons, which was produced by 4188 miners, 316 mules and 77,785 kegs of black powder. Five companies did not report. They employ about 300 men. I estimate their tonnage at about



THOMAS H. SHAW, ARKANSAS

200,000 tons per annum, which would make the total 2,152,461.93 tons. I believe that it will be safe to say that the production for the calendar year will exceed 2,250,000 tons. Five of the largest mines in Sebastian County have installed electric coal-mining machines which are proving to be a success in two ways: First, in safe-guarding the shotfirers and property from explosions, which are frequent in these mines when the coal is shot off the solid; second, in making a better quality of coal.

A new mine at Hartman, Johnson County, and another at Alix, in the same county, will be ready to ship coal in the near future. Pope and Johnson Counties have a fine quality of semi-anthracite coal second to none in the entire Southland; it is free burning, producing a uniform heat, does not clinker, and is an excellent stocker; the average selling price, f.o.b. mine, is about \$3 per ton. The mining of coal will make a manufacturing city of Fort Smith, the county seat which is surrounded by cheap coal, and has six railroads entering into it.

During the last year there have been many local strikes caused by a difference of opinion as to the construction

to be placed on the agreement between the miners and operators. The mine of the Scranton Anthracite Coal Co., at Montana, Johnson County, is still idle over a strike that commenced on Sept. 5. Six fatal and 25 non-fatal accidents occurred during the fiscal year.

There have been numerous minor explosions in the mines of Arkansas during the past 20 years, of which no official record has ever been made. It is of interest to note the two largest accidents which have occurred in the mines of this state, namely, that at Huntington in 1897 and that at Bonanza in 1903. On Mar. 4, 1897, in the Kansas & Texas Mine No. 44 at Huntington, Ark., a powder and dust explosion occurred, in which 14 men were killed and 12 badly burned. On Nov. 20, 1903, in the Bonanza No. 20 mine at Bonanza, Ark., a gas explosion occurred in which 11 men were killed and two escaped, both badly burned.†

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Colorado

BY A. R. TIBBITS*

SYNOPSIS—*The production of coal has been considerably affected by a strike which commenced in the northern field in 1909, and which was ineffective but never declared at an end. The southern field was unionized and a strike was declared on Sept. 23, which is likely to last some time. The strike occurred in face of large concessions in wages to day men.*

■

With the closing of the year 1913, the coal industry of Colorado is seriously hampered by a bitter coal strike. Furthermore, there are no prospects of a settlement in the near future. Both parties to the dispute are determined not to concede the one vital point on which the strike hinges, namely, recognition of the union.

In the early months of the year, during the session of the last legislature, a new coal-mining bill was submitted for passage and was referred for a revision to a subcommittee, composed of two operators, one representing the Colorado Fuel & Iron Co., the other the Rocky Mountain Fuel Co., two coal miners, one the state inspector of coal mines and the other a member of the international board of the United Mine Workers of America, representing District No. 15, and the fifth member, an acting state senator and a metal miner by calling, who was the chairman of the committee.

A DRASIC LAW WHICH MET WITH READY COMPLIANCE

The result was a strong and effective law, in the modeling of which, for the first time in the history of Colorado, laborer and employer were in harmony. The law as revised received the approval of all the operators and the mine workers. This law went into effect on Apr. 5, and gave the operators six months to comply with its provisions. The result was gratifying. Immediately the coal companies, especially the large ones, proceeded to carry out the numerous improvements demanded by the act which in most cases meant the outlay of much money, and in all cases, compliance with its new requirements increased the cost of production.

One of the great contentions had been the nonemployment of check weighmen at the various mines. The min-

*Neither of these is recorded in the remarkably complete list compiled by the Bureau of Mines.—Ed.

*State inspector of coal mines, Denver, Colo.

ers were allowed, without any protest or delay, to avail themselves of the provision in the new law permitting them to select their own check weighmen.

CONCESSIONS TO MINERS

An eight-hour law had been passed by the 19th general assembly, and before it went into effect, most of the large companies placed their mines on its basis with pay for a 10-hour day. In addition to these concessions, in the northern field, where the strike called in 1909 is still in progress, the operators on Oct. 15 of this year, granted a further increase in the wage scale to the underground workers amounting to 6 per cent.

However, with the beginning of the year, each month showed a decrease in the production of coal, the cause of which was laid to shortage of men. In July the production took an upward turn until the strike was called. Under normal conditions the production would probably have been about the same as in 1912, to wit, 11,016,948 tons. Conditions were improving at all the mines, the wage scale seemed satisfactory and there was no special indications of unrest.

BEGINNING OF STRIKE

The strike that had been called in the northern field in April, 1909, and is still in force, resulted from a disagreement as to the wage scale. However, nonunion miners took the places of the strikers, and while production was not and has not resumed its normal capacity, yet it was sufficient to meet the demand of the market. The Moffat R.R. bringing to Denver large shipments of Routt County coal, no doubt lessened the demand for lignite, as the former coal is considered a splendid fuel for all purposes.

The United Mine Workers, it would seem, have not been idly waiting for the settlement of this older strike, but had a number of their organizers out in the southern field and an effective unionizing of the men was accomplished as results show.

In September a conference was called by the leaders of the union but was ignored by the operators, not one responding, and on Sept. 23 a strike was called, and about 85 per cent. of the men came out. In consequence, the production in October was over a half million less than in September, that month holding its own, as great activity was displayed at the mines in anticipation of the coming strike.

The November and December output will show the same decrease. Several sincere attempts have been made to effect a settlement but they failed. The operators are willing to grant open shop, to abolish compulsory trading at their company stores, to carry out all the provisions of the new law, but they absolutely refuse to recognize the union as a body. The men as stubbornly will not waive this one demand. Some of the operators of small mines have signed up with the union and are getting out increased tonnages.

The militia was called out to maintain order and allow such men as wished to return to the mines to work unmolested, but notwithstanding there is very little change in the situation.

HIGH PRICE OF COAL CREATES UNFAVORABLE CRITICISM

Shortly after the strike was called, the market price of coal went up as high as \$7.25 for bituminous and \$6.50 for lignite lump coal per ton. Whether there was more

coal stored than was known, or the consumption of coal was curtailed by the warm weather prevailing in October and November, the prices have dropped 25 and 50c. per ton.

Several of the large coal companies are operating state land and as their production is affected by the strike and the prospects of a settlement are not encouraging, there is much agitation in favor of the state of Colorado operating the mines on its own land. However, as this would be a radical experiment with uncertain consequences, it is not likely to be put into effect; the advocacy of such a move probably being nothing more than a resentful protest against the increased cost of fuel and the loss and demoralization of all business that a strike of such proportions as this is bound to entail.

The new law imposed a tax of $\frac{1}{4}$ c. per ton on run-of-mine, payable quarterly, and creates a coal-mine inspection fund. Two quarters have elapsed and there has been no trouble in the collection of this tax and no question of legality raised to evade payment.

| COAL PRODUCTION OF COLORADO FOR THE YEAR 1913 | |
|---|------------|
| Number of mines in operation..... | 167 |
| Tons of lignite coal produced..... | 1,513,528 |
| Tons of semibituminous coal produced..... | 824,549 |
| Tons of bituminous coal produced..... | 6,850,355 |
| Tons of anthracite coal produced..... | 51,903 |
| Total number of tons produced..... | 9,240,335 |
| Total number of tons produced in 1912..... | 11,016,948 |
| Total number of tons of coke produced..... | 889,989 |
| Total number of employees in and about the mines..... | 13,107.6 |
| Total number of days worked..... | 191.2 |
| Number of men killed in the mines..... (38 killed in the Vulcan disaster.) | 111 |

| PRODUCTION BY COUNTIES | | | |
|---|-----------|------------------|-----------|
| Boulder | 968,018 | Jefferson | 154,531 |
| Delta | 79,005 | Las Animas | 3,781,713 |
| El Paso | 329,054 | La Plata | 138,414 |
| Fremont | 536,793 | Mesa | 123,876 |
| Garfield | 159,589 | Pitkin | 52,048 |
| Gunnison | 474,469 | Routt | 304,737 |
| Huerfano | 1,647,368 | Weld | 428,795 |
| Jackson | 61,925 | Total | 9,240,335 |
| December output (estimated) 608,898 tons. | | | |

Idaho

BY ROBERT N. BELL*

SYNOPSIS—The state only produced about 2000 tons in 1913. The Interior Department has recently permitted entry on coal lands and some progress in development may be expected.

The coal-mining industry of Idaho is in an embryonic stage as the state is almost exclusively occupied by crystalline metal-bearing formations. We import and use annually from the neighboring states of Wyoming and Utah and from British Columbia approximately two million tons of coal and produce from Idaho sources a negligible quantity of about 2000 tons, which has been the annual output for the past 7 or 8 years.

Our metal mines employ over 6000 men and their principal product is lead-silver ore. We excel every other state in the Union in the output of this class of mineral, but our possible coal-bearing formations are limited indeed and consist of a small area embracing only a few townships on the eastern border of the state in Fremont County, where a portion of the rich coal-bearing Laramie Cretaceous horizon extends over the Idaho line from Uintah County, Wyoming, and in which there has been

*State mine inspector, Boise, Idaho.

Note—For lack of space, this interesting report has been curtailed and will be completed in a forthcoming number.

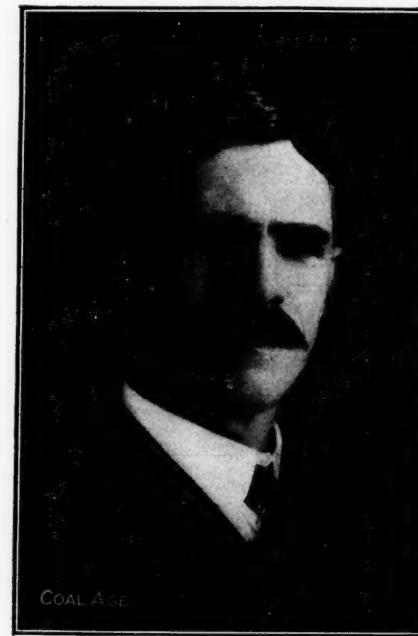
discovered a series of 18 closely parallel and steeply pitching seams of high-grade soft coal.

This coal, like many other Western fuels, is classified as black lignite, but as a matter of fact is of excellent quality and high heating value with a long flame and equal to some of the best Eastern bituminous coals in steam-producing and storage qualities.

Until a year ago, when a new railway branch was completed within 10 miles of the mines, these deposits were situated nearly 35 miles from the nearest transportation point, and all the coal mined in their development has been sold to the local farming community of the Upper Snake River plains which is a well populated irrigated- and dry-farm territory. The trade with the farmers occurs when sleighing is good, the coal being sold them at the mine at prices ranging from 50c. per ton for slack to \$3.50 per ton for clean lump coal.

A REASON FOR IDAHO'S BACKWARDNESS

The tardiness of the development of this promising series of coal deposits is accounted for by the fact that they are owned by local Idaho people of small means, and have been situated until a year ago on unsurveyed public land, which, since the discovery of the coal, has been withdrawn as forest reserve, phosphate-rock reserve and for coal classification.



ROBT. N. BELL, IDAHO

This has made the process of obtaining title from the government difficult, but the present administration of the Interior Department has taken a broader view of the matter and has restored to entry the two sections of land covering the principal development. Final certificate for patent has been issued on these two claims, and with the completion of title, it is likely that these deposits will be more extensively developed as there is a crying demand by the settlers in this locality for cheaper fuel. Soft coal from Wyoming and Utah brings from \$8.50 to \$10 per ton at the railroad siding and we are living in hope that Idaho will make a little better showing in the coal-production list of the United States in the not distant future.

Illinois

BY MARTIN BOLT*

SYNOPSIS—A substantial advance has been made in coal mining during the past two years. No serious labor troubles have been experienced although there have been many petty suspensions. The fatal mining accidents are estimated at 180 for the year, six large new mines have been sunk and the tendency in practice is away from the mine of small production.

■

Coal mining in Illinois has been making a steady, substantial advance for the fiscal years, ending June 30, 1912 and 1913. The number of short tons mined for the above periods was for the year ended June 30, 1912, 57,514,240, and for that ended June 30, 1913, 61,846,204.

The output of the shipping mines, for the same years, was: June 30, 1912, 56,096,696; June 30, 1913, 60,616,416. These figures show an increase of 4,519,720 tons.

From Jan. 1, 1912, to June 30, 1912, the shipping mines produced 26,574,232 tons; from July 1, 1912, to Dec. 31, 1912, 32,494,086 tons.

Figures at hand at the present time will show that the commercial or shipping mines produced in the calendar



MARTIN BOLT, ILLINOIS

year 1912 in round numbers 59,000,000 short tons, and from the same source we find that the tonnage during the first half of the year 1913 from the same mines was 28,021,330 tons. Assuming that the same relative increase is maintained the approximate tonnage for the calendar year ending Dec. 31, 1913, will be 62,000,000 short tons.

There is a possibility, however, that the mild weather for the past few weeks will reduce the figures slightly, but not to any great extent.

There has been no serious labor trouble in the mines of Illinois in the year 1913, although there have been a large number of temporary suspensions of single mines. These troubles, while much to be regretted, do not materially affect the total output.

Accidents in the mines of the state heretofore have increased at about the same rate as the tonnage. The num-

ber of fatal accidents for 1913, based on former years and figures at hand, will probably be nearly 180 and may be in excess of this number, the estimate for 11 months ending Nov. 30, 1913, is 163.

The fatal accidents in the shipping mines for the years ending June 30, 1912 and 1913, are the same for both years, namely, 173; the nonfatal accidents for the same years are as follows: 1912, 792; 1913, 1016, or an increase of 28.28 per cent. As the figures for the fiscal and calendar years vary only slightly, it is fair to assume that the fatal accidents for the calendar year 1913 will be about what they were for 1912, while the nonfatal accidents will show an increase of nearly 28 per cent.

The number of shipping mines will show a slight decrease, but the average production per shipping mine will show an increase.

There have been six large mines opened in this state during the year, as follows: Franklin County has three and all will be large producers of coal. Christian County has two, the Illinois Midland Coal Co.'s Nos. 7 and 8, located at Kincaid, on the Illinois Midland R.R., seven miles from Taylorville. The Nokomis Coal Co. has also put down a large mine at Nokomis, in Montgomery County. All of the foregoing are in the No. 6 seam, while Newsam Bros. have a new mine at Glasford in Peoria County, which is down to the No. 5 seam.

■

Iowa

BY L. E. STAMM*

SYNOPSIS—The conditions governing the mining industry of Iowa during 1913 were not materially different from those existing in 1912. The production for the fiscal year ending June 30, 1913, was over 7,400,000 tons, and it is confidently believed that the output for the calendar year 1913 will not vary greatly from that of the fiscal year.

■

The general conditions of the coal industry in Iowa for the year 1913 were very similar to those existing in 1912. Progress in the mines of the state has been, on the whole, fairly satisfactory during most of the year. However, weather conditions in the months of October, November and December were such that there was a general falling off in the demand for coal of all grades. With the exception, therefore, of the large operations having railroad contracts, the mines of the state did not work up to their capacity during the months named above.

Statistics covering the coal production of Iowa are gathered by the mine inspectors' department for the fiscal year ending with June 30 of each year. Those secured for the year 1913 show an increase of 594,929 tons over the amount produced in the state of 1912. The production for 1913 by districts with the number of miners employed in each is as follows:

| COAL PRODUCTION OF IOWA FOR FISCAL YEAR 1913. | | |
|---|----------------|------------------|
| | Tons of Coal. | Miners employed |
| First District..... | 2,813,789 | 6,345 |
| Second District..... | 2,337,708 | 4,777 |
| Third District..... | 2,264,260 | 4,563 |
| Total..... | 7,415,757 Tons | 15,685 Employees |
| Coal Production for year ended June 30, 1912..... | | 6,820,828 |
| Coal Production for year ended June 30, 1913..... | | 7,415,757 |
| Gain for 1913..... | | 594,929 Tons |
| Fatal Accidents for the year 1913..... | | 24 |
| Non Fatal Accidents for the year 1913..... | | 176 |

*Secretary Iowa Mine Inspectors, Des Moines, Iowa.

*Chief clerk, State Mining Board, Springfield, Ill.

Twenty-three counties in the state are listed as coal-producing. In a number of these the mining operations are conducted on a small scale and the few mines that are operating are worked only in the winter to supply the local trade. Monroe County is the largest producer of coal of all grades. Polk County ranks second and Appanoose third. Last year these three counties yielded 5,243,279 tons of coal, or more than two-thirds of all that produced in the state.

New developments in the coal industry are in progress in several of the larger counties in the state, and the mines now started will be in shape to add considerably to the output for the coming year. Some new developments have also been made in Polk County the past year, and all these point to an increase in the coal production of the state for the coming year.

Iowa had fewer fatal accidents in the mines for the fiscal year of 1913 than for many years. The number of tons of coal mined for each fatal accident was much higher than in former years. The number of nonfatal accidents for 1913 was about the same as for 1912. The majority of the accidents occurring in the mines were caused by falls of roof or slate. These were for the most part in the rooms of the miners with but few on the entries.

The next greatest cause of accidents was that of being struck by cars, falling off cars, etc. These occurred chiefly to the drivers in the mine. There were no accidents of great magnitude in the mines during the year, and none in which more than one person met death at once. Iowa will, therefore, compare favorably with any coal-producing state in the Union with respect to accidents, both fatal and nonfatal.

Both the operators and the miners of this state have an organization and a working agreement is entered into every two years by the representatives of these bodies. Therefore, but few labor troubles occur in the mining industry. Those that do take place are chiefly local and last but a few days, the trouble usually occurring over the interpretation of the working or wage agreement. These are generally settled quickly by the representatives of both organizations.

Considerable improvements have been made in the mines of Iowa during the past year, chiefly in the manner of transporting the coal in the mines. Many operations have installed gasoline motors, others use electrical haulage. Some of the mines of the state are equipped with electrical hoists. Mining machines have also been introduced in some of the mines, and the general tendency

of coal in Iowa for the fiscal year ending with June 30, 1913, was 7,415,757 tons. It is firmly believed that the production for the calendar year 1913 will approximate that of the fiscal year.

■

Indiana

BY F. I. PEARCE*

SYNOPSIS—The coal production of Indiana for the fiscal year ending Sept. 30, 1913 is reported as over 17 million tons. The total number of men employed was 21,683 and the average yearly wage was \$736.06. There were in all 59 fatalities in and about the mines of the state.

■

If the number of tons of coal produced and wages paid mine employees is any criterion, the mining industry of Indiana, as a whole, for the fiscal year ending Sept. 30, 1913, discloses a fairly gratifying condition of both miners and mine operators. Notwithstanding the fact that there were a few operations closed down the entire year and practically all of them lost either a few days, weeks or months time on account of no sale, lack of railroad cars, local strikes or other causes, the production is reported as 17,246,565 short tons, or 877,679 tons less than the largest and 3,041,987 tons more than the second largest production in the history of the state.

Of this production, 9,637,901 tons or a fraction less than 56 per cent. was mined with machines, and 7,608,664 tons or 44 per cent. by hand. This, shows an increase of about four per cent., in the production of coal mined by machines over that of last year. And this production would have been even larger had it not been for the difficulty experienced in undercutting the coal in a number of mines in which mining machines were tried out.

In producing this coal there were used, 526,580 kegs of black powder, 283 cases of "permissible explosives" and 52 cases of Hoysite safety powder.

While it is true that considerable time was lost at some of the mines on account of causes other than those due to shortage of railroad cars, local strikes and the flood in March, yet the major part of the time lost may be attributed to dull trade, resulting from an open winter, an increased production and extremely sharp competition in securing a market.

The following table exhibits the relative rank of the twelve counties in the number of tons produced and wages paid:

TABLE SHOWING THE TONS OF COAL PRODUCED AND WAGES PAID TO MINERS IN INDIANA FOR THE YEAR ENDING SEPT. 30, 1913
BY COUNTIES—THE BLOCK AND BITUMINOUS COAL EACH BEING SHOWN SEPARATELY

| County | Production of Block Coal | Wages Paid | Production of Bituminous Coal | Wages Paid | Total Production | Total Wages |
|------------------|-----------------------------|--------------|----------------------------------|-----------------|---------------------|-----------------|
| Vigo..... | 109,380 | \$267,875.12 | 4,367,565 | \$4,033,962.91 | 4,476,945 | \$4,201,838.03 |
| Sullivan..... | ..... | ..... | 3,238,642 | 3,152,995.00 | 3,238,642 | 3,152,995.00 |
| Greene..... | ..... | ..... | 2,753,015 | 2,312,721.32 | 2,753,015 | 2,312,721.32 |
| Vermillion..... | ..... | ..... | 2,104,229 | 2,063,846.77 | 2,104,229 | 2,063,846.77 |
| Knox..... | 250,352 | 390,262.43 | 1,664,619 | 1,291,539.33 | 1,664,619 | 1,291,539.33 |
| Clay..... | ..... | ..... | 378,037 | 356,733.59 | 628,389 | 746,996.02 |
| Warrick..... | ..... | ..... | 619,614 | 500,669.93 | 619,614 | 500,669.93 |
| Pike..... | ..... | ..... | 610,623 | 548,532.72 | 610,623 | 548,532.72 |
| Parke..... | 80,265 | 110,376.96 | 465,971 | 426,296.44 | 546,236 | 536,673.40 |
| Vanderburgh..... | ..... | ..... | 288,058 | 304,288.82 | 288,058 | 304,288.82 |
| Gibson..... | ..... | ..... | 219,552 | 212,245.70 | 219,552 | 212,245.70 |
| Daviess..... | ..... | ..... | 75,471 | 67,363.74 | 75,471 | 67,363.74 |
| Fountain..... | ..... | ..... | 15,584 | 15,228.70 | 15,584 | 15,228.70 |
| Perry..... | 5,588 | 4,758.15 | ..... | ..... | 5,588 | 4,758.15 |
| Total..... | 445,585 | \$673,272.66 | 16,800,980 | \$15,286,724.97 | 17,246,565 | \$15,959,997.63 |

is toward lessening the cost of production by better equipment for handling the product.

In conclusion, it may be said that the total production

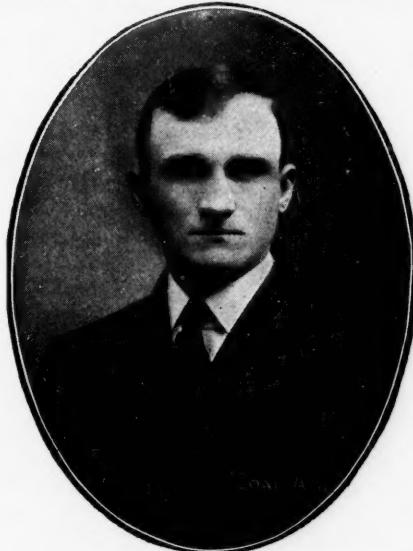
Vigo County, due to the increase of development in that field recently, exceeded Sullivan as the largest producing county in the state by more than 1,238,303 tons.

DISTRIBUTION OF PRODUCT

Of the bituminous coal, 10,078,336 tons were consumed in Indiana, and 6,722,644 tons were shipped to other states. Of the block coal, 203,522 tons were consumed in Indiana and 242,063 tons were shipped outside, or a fraction less than sixty per cent. of the total production was consumed within the state. This shows an increase of about two per cent. in the home consumption of the yearly production over that of any previous year, indicating that the consumers of coal are beginning to realize more than ever, the value of Indiana fuel.

COST OF PRODUCTION

The total wages reported from the bituminous field was \$15,286,724.97, making a fraction less than 91 cents



FRANK I. PEARCE, INDIANA

per ton for the labor cost of production. The total wages reported from the block coal field was \$673,272.66 or a fraction over \$1.51 per ton for the labor cost of production. These figures show a slight increase in the cost per ton for the labor for the total production of bituminous and block coal over that of any previous year.

Besides the many varying conditions to be met and overcome in the operation of a mine that result in a variation of the cost of producing a ton of coal, one year with another, there are many things which now contribute to increase the cost, and to that extent necessarily add to the selling price. Higher wages are an important factor; deeper mining and the increased expense of keeping the mines in proper condition, more efficient safety appliances to protect life and health, the rising cost of timber and all kinds of material used in a mine contribute to increase the cost of production.

MARKET PRICES

The market price for mine-run bituminous coal (except yearly contracts), f.o.b. cars at the mine, during the period from Oct. 1 to Dec. 31, 1912, ranged from \$1.15@1.45 per ton; from Jan. 1 to Mar. 31, 1912 from \$1.05@1.25 per ton; Apr. 1 to June 30 from \$1.05 (with perhaps some selling as low as \$1) @ \$1.20; from July 1 to Sept. 30, the selling price ranged from \$1.10@1.15 per ton. The market selling price for screened block coal, (except yearly contracts), f.o.b. cars at the mine, from Oct. 1 to Dec. 31, 1912 ranged from \$2.10@2.50;

from Jan. 1 to Mar. 31, 1913, the price averaged about \$2.20; Apr. 1 to June 30 from \$2@2.10 and from July 1 to Sept. 30, the price ranged from \$2.10@2.20.

The total number of employees reported for the year was 21,683, or an increase of 453 over the last year. Of this number 20,441 were bituminous, and 1242 block mine employees.

The aggregate number of days the mines were reported as being in operation was 29,452, and the number of days idle, due to no sales, 10,408; no railroad cars, 2195; local strikes, 273 and on account of funerals, 35; others causes, 3353.

AVERAGE WAGES

The total wages reported from the bituminous field being \$15,286,724.97 makes an average earning of \$747.84 for each bituminous employee. The total wages paid to block coal mine employees being \$673,272.66 shows an average earning of \$542.08. The aggregate wages for the state being \$15,959,997.63 and the total number of employees, 21,683 shows an average earning of \$736.06 for each mine employee in the state, which is the highest average wage earned per mine employee.

NEW AND ABANDONED MINES

Sixteen new mines, all of which, with the exception of two or three will be large producers were opened up, and eleven mines were abandoned during the year ending Sept. 30, 1913.

FATALITIES

During the year there were 59 fatalities. The most prolific causes of accidents were the following: Falling slate at the face, 18; use of explosives, (including firing of shots) 15; mine cars and motors, 7; explosions of firedamp, 6; falling coal at the face, 4; falling slate on the traveling and roadways, 4; in all 54 or 93 per cent. of the total number of fatal accidents, may be attributed to these causes.

Of the six fatal accidents due to explosions of firedamp, three were caused by a sudden liberation of gas following the caving in of the roof and three to firedamp that had accumulated in the mine as a result of booster fans (operated by electric power) which have recently come into use in mines of this state, being allowed to stand idle.

The above data do not include figures for about 450 small mines, clay and strip banks which have an estimated production of about 450,000 tons employing from 2500 to 3000 men since these do not come under the jurisdiction of the mine-inspecting department.

X

Kansas

BY FRANCIS KEEGAN*

SYNOPSIS—The estimated production for 1913 is placed at 7,400,000 tons. This output, which is a decided increase over previous years, has been accomplished with a decrease in fatalities. The steam shovel is beginning to play an important part in the stripping operations in the Kansas field.

X

The records in the office of the State Inspector of Mines for Kansas, when completed, will show that in

*Assistant commissioner of labor, Pittsburg, Kan.

round numbers 7,000,000 tons of coal were produced during the fiscal year ended June 30, 1913. Basing estimates on the figures for this period, which shows a marked increase in production over former years, there is every reason to believe that the calendar year 1913, will prove to be the most prosperous in the coal-mining industry in the state's history in point of tons of coal produced, number of men employed and number of days worked. In fact there is no hesitancy in saying that a conservative estimate of the production of coal from the mines, including the strip pits, will reach 7,400,000 tons for the year ending Dec. 31, 1913.

Complete figures are not at hand, but it is estimated that at least 12,000 men worked an average of 210 days in and around the mines during the year. This in itself, is a good record, but the most gratifying part of it is that this success has been attained with a decrease in the number of lives lost.

TOTAL ACCIDENTS HAVE DECREASED

During the fiscal year ended June 30, 1912, thirty-seven fatal accidents occurred in and around the Kansas coal mines, whereas during the year ending June 30, 1913, twenty-eight men were killed at the same mines and in the year ending Dec. 31, 1913, there were but 27 fatalities.

When we consider the increase in the production of coal in connection with the decrease in the number of fatal accidents which have occurred, the contrast is just cause for elation and while it is conceded that accidents will continue to occur as long as coal is produced and the number will fluctuate from time to time, we are constrained to the belief that a strict observance of the mining laws by miner and operator alike, will have a great tendency to reduce mortality in our mines.

There is at present a strong disposition on the part of the operator and the miner in this field to observe and comply with the mining laws and with their co-operation and the efforts which are put forth by the Mine Inspection Department in regard to the enforcement of the mining laws of the state, it is hoped that the lives and health of the mine workers may in the future be properly safeguarded.

In many cases during the past year, it became necessary for the inspectors in the performance of their duties to resort to drastic measures in order to secure compliance with the mining laws. Several of the largest mines of the state were closed by the inspectors, principally on account of the poor condition of the ventilation found therein. Aside from this and a number of local strikes, work in the mines was not seriously affected during the entire year.

RECENT LEGISLATION

The last session of the Kansas legislature amended the Workmen's Compensation Law, which, while not perfect in all respects, is now one of the best measures of its kind in effect in the United States. The Bathhouse Law was also amended. The size of lockers, number of sprays, the kind and condition of the bathhouse to be maintained at all the mines within the state is now specified in the statutes.

A powder law was also passed by the same legislature and was agreed to by the miners and operators. By its provision the powder is delivered to the miner at his

working switch in 25-lb. kegs. This latter provision doubles the size of the package and consequently increases the danger from explosives in the mines.

An appropriation of \$3500 was made at the direction of Governor Hodges for the purpose of erecting a building at Pittsburg to house the Government Bureau of Mines' rescue car and for the purchasing of mine rescue apparatus.

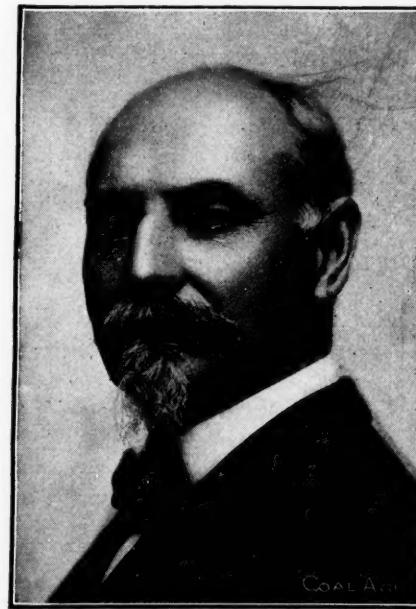
Quite recently a number of steam shovels have entered the field and the stripping of coal by this method is progressing at a rapid rate. The production of Kansas fuel by this means will, therefore, during the next year, reach a large figure.

Kentucky

BY C. J. NORWOOD*

SYNOPSIS—Kentucky has increased its production, due to the opening of new mines, but both cars and labor fail to square with the demand.

Incomplete returns for 11 months of the past year indicate that the output for the year will be about 18,500,000 tons, but the estimate must be accepted with due caution. The increased tonnage is chiefly due to new develop-



C. J. NORWOOD, KENTUCKY

ment. There were no strikes of moment, but the production has been adversely affected by the interruption of traffic resulting from the Ohio Valley floods, and occasional car shortages, especially in the eastern field. There has also been much complaint of labor shortage in that section.

The coke output has increased but I would not hazard an estimate as to the amount produced. There has been a decreased number of fatalities and no explosions.

If the ventilation is defective in any portion of the mine or in the entire mine, the foreman should not hesitate to withdraw the men from the areas affected. It is only by such vigorous measures as this that serious mine disasters may be averted.

*Chief inspector of mines, Lexington, Ky.

Maryland

BY WILLIAM WALTERS*

SYNOPSIS—It is impossible to state at present the total production of Maryland for 1913, but it is believed that this will be somewhat below that for 1912, which was 4,085,817 tons. There were no serious labor troubles and only nine fatal accidents reported between May 1 and Dec. 23.

■■■

In reviewing the coal mining industry of Maryland for the year 1913, it will not be possible to give the exact figures at the present time as to production. The tonnage will be somewhat smaller for 1913 than that for 1912, which was 4,085,817 gross tons, showing a decrease of 80,919 tons from that of the year 1911. The decrease is due to the fact that there were several coal mines idle during the greater part of the year. Some of these mines are good producers and from the best information available at present all the larger coal operators report a decrease, except the Georges Creek Coal Co., Inc., which reports a large increase.

The number of employees in the mines of the state will not be materially changed from that of the year 1912, which was 5703. The average time worked in the mines of the state will be greater than in 1912, which was 245 days.

During the fiscal year beginning May 1, 1913, there have been nine fatal accidents reported up to Dec. 23. Five were caused by falls of rock and coal, and the other four by mine cars. The reports of nonfatal accidents have increased owing to the compensation now paid through the Miners' and Operators' Coöperative Relief fund to employees who lose time on account of injuries received while discharging their duties. Before this act, there was little or no occasion to report minor accidents.

During the year, there were four strikes throughout the state, affecting four different mines, but these were only local at each of the places, and were not general strikes affecting other mines at the same time. Two were to secure the semimonthly pay and only lasted a short time. The other two were on account of trouble at the weigh scales, and were brief as they were settled within a few days after they occurred, and with practically no financial loss to either the men or the companies.

The new child-labor law which went into effect last year is being enforced by the mining companies in the state. Children under 16 years of age who wish to be employed in or about the mines are required to obtain an employment certificate from their parents before they have permission to work.

■■■

Michigan

BY THOMAS KANARY†

There are 22 mines in active operation in the state of Michigan, the majority of these being in Saginaw and Bay Counties. Two new mines were opened in the past year, one at Unionville, Tuscola County, by the Handy Bros. Mining Co., of Bay City, and one in Genesee County by the What Cheer Coal Mining Co., of the same town.

Seven mines were abandoned during the year, four in

*State mine inspector, Midland, Md.

†State inspector of coal mines, St. Charles, Mich.

Saginaw, two in Bay and one in Shiawassee County. There were no strikes of importance. One suspension took place in September over a misinterpretation of the mining scale, but after a week's idleness work was resumed.

There were 169 accidents in and around the mines; two of which proved fatal and six were of serious nature, while 161 were not serious. As a rough estimate, I would figure that 900,000 tons of machine coal and 500,000 of pick coal were mined in 1913 in this state.

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Missouri

BY GEORGE HILL* AND J. P. HAWKINS†

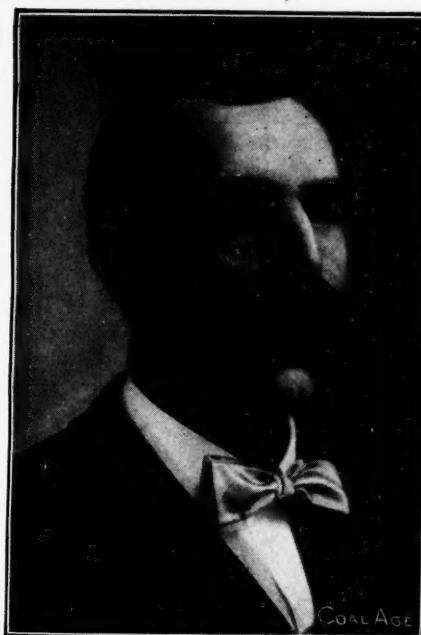
The output of coal for 1913 will be about the same as for 1912, when it was 4,229,907 tons. The labor disputes in the coal fields were unimportant and few in number. The fatal accidents will be 50 per cent. less than last year.

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Montana

BY J. B. McDERMOTT‡

The reported production of Montana for 1913 is larger than the output of last year, which year produced the largest tonnage on record in Montana. The larger mines were



J. B. McDERMOTT, MONTANA

operated more steadily this year than last; there were few labor troubles or disputes and those which occurred were adjusted satisfactorily to both parties concerned with little loss of time.

Belt mine, which is the property of the Anaconda Copper Mining Co., was abandoned during this year. It has produced during the last 10 or 11 years some 2,000,000 tons of coal and employed from 200 to 600 persons. All the pumps, engines, rails and cars were pulled out. The

*Chief inspector of state of Missouri, Jefferson, Mo.

†Secretary, Bureau of Mines and Mine Inspection, state of Missouri, Jefferson, Mo.

‡Chief state coal mine inspector, Helena, Mont.

property will be leased for local supply and general commercial use.

NEW DEVELOPMENTS

The Cottonwood Coal Co. is opening a mine in Fergus County near Windham at a place named Lehigh. The shaft, which is to have five compartments, has been in process of sinking since the middle of October. Two compartments of the shaft will accommodate two six-ton skips for hoisting coal; two others will be used for men and materials; and one compartment will be devoted to pipes, etc. The plant is to be modern in every particular, and it is expected to be as large, if not larger, than any other in Montana; James Pearson, manager of the Cottonwood Coal Co.'s properties at Stockett is giving personal attention to this Fergus County operation.

The Republic Coal Co., at Klein, is installing a battery of boilers in addition to those already in use. It is adding a dynamo and generator, electric pumps, and mining machines to its equipment. The shaft in Musselshell County formerly owned by Jacobs & McCleary, who did but little development work in connection with it, has been sold, if all accounts are true.

A rather peculiar condition obtains in our state. Last year 100,000 tons were shipped into Montana from North Wyoming; South Wyoming delivered 400,000 tons to us, and about 300,000 tons were shipped in from British possessions; yet, we are sending coal to Washington, Idaho and Oregon, and competing with these states and Canada in the markets.

HYDRO-ELECTRIC PLANTS COMPETE WITH COAL

During the present year the Cottonwood Coal Co., at Stockett; the Nelson Coal Co. at Sandcoulee; the Lochray Coal Co. at Tracey; the Sand Coulee Coal Co. at Sandcoulee; James Brodie & Son at Belt; Calone & Johnson also at Belt connected with the hydro-electric line of the Montana Power Co. This power is used to run com-

to the Montana coal mines, yet in face of its continued extension, we have a greater output this year than ever before and production will continue to grow greater in Montana for several years yet. The population in Montana is increasing rapidly; there are over 500,000 people in the state and branch lines are being added to many of the railroads. Our market will, therefore, continue to expand.

COMPARISON OF 1912 & 1913 MONTANA COAL MINES

| | 1913 | 1912 |
|---|----------------|----------------|
| Mines reporting production to department | 59 | 48 |
| Machine runners employed | 199 | 181 |
| Loaders employed | 506 | 563 |
| Miners employed | 1633 | 1538 |
| Inside daymen employed | 854 | 746 |
| Outside daymen employed | 576 | 570 |
| Total number employed in and around mines in 1912 | 3768 | 3598 |
| Production per man per day employed, tons | 4.4 | 4.3 |
| Total production | 3,365,712 | 3,143,799 |
| Value of output | \$5,611,079.72 | \$5,600,097.00 |
| Tons produced per life lost | 224,381 | 314,380 |
| Tons produced for each serious accident | 46,732 | 66,890 |
| Men employed per nonfatal accident | 52.3 | 76 |
| Men employed for each fatal accident | 251 | 360 |
| Death rate per 1000 employed | 3.98 | 2.78 |
| Serious accidents per 1000 employed | 19.1 | 13.0 |
| Kegs of powder used | 80,550 | 72,740 |
| Pounds of dynamite used | 25,765 | 25,331 |
| Tons of coal mined by machine | 1,057,345 | 1,074,258 |
| Tons shot off the solid and hand mined | 2,308,368 | 2,069,540 |
| Percentage of coal machine mined | 31 | 34 |

North Dakota

By JAY W. BLISS*

SYNOPSIS—The mild weather of November and December caused a decrease in the production of lignite during the past year. Although 105 mines were in operation, but six fatal accidents have been recorded. The briquetting process, which is now being tried for the first time, is considered the most important event in the lignite industry.

¶

The production of lignite in North Dakota for the year just closed was about 495,000 short tons as against 528,603 for the year 1912. The unusually mild weather which prevailed throughout the state in November and December

STATISTICS OF COAL MINING IN MONTANA IN 1913 BY COUNTIES

| County | Number of Mines | Operating Days | Total Tonnage | Value at Mines | Hand-Mined Tons | Machine-Tons | Black Powder Kegs | Dynamite Lb. |
|-------------|-----------------|----------------|---------------|----------------|-----------------|--------------|-------------------|--------------|
| Carbon | 14 | 198 | 1,389,640 | \$2,600,973.24 | 1,108,816 | 280,824 | 30,088 | 160 |
| Musselshell | 4 | 251 | 982,516 | 1,480,046.26 | 753,376 | 229,140 | 30,112 | ... |
| Cascade | 16 | 224 | 917,148 | 1,335,536.70 | 383,362 | 533,786 | 17,722 | 22,624 |
| Park | 2 | 132 | 27,582 | 62,085.02 | 13,987 | 13,595 | 359 | 2,881 |
| Hill | 6 | 220 | 19,213 | 51,982.00 | 19,213 | ... | 810 | ... |
| Blaine | 2 | 251 | 8,213 | 12,055.00 | 8,213 | ... | 560 | ... |
| Fergus | 6 | 168 | 8,067 | 23,059.50 | 8,067 | ... | 200 | ... |
| Sheridan | 3 | 230 | 5,656 | 11,151.00 | 5,656 | ... | 415 | ... |
| Chouteau | 3 | 149 | 3,996 | 12,783.50 | 3,996 | ... | 166 | ... |
| Custer | 1 | 143 | 1,983 | 5,949.00 | 1,983 | ... | 100 | ... |
| Missoula | 1 | 100 | 1,549 | 6,158.00 | 1,549 | ... | 8 | ... |
| Dawson | 1 | 15 | 150 | 300.00 | 150 | ... | 10 | ... |
| Totals | 59 | | 3,365,712 | \$5,611,079.72 | 2,308,368 | 1,057,345 | 80,550 | 25,765 |

* Includes coal shot off the solid.

pressors, pumps, fans, drills, haulage motors, box-car loaders, shaker screens and pneumelectric undercutting mining machines. Not only the mines but the Butte, Anaconda & Pacific R.R., which hauls the ore from the mines in Butte to the smelters in Anaconda has discarded steam engines and runs all its trains, both in freight and passenger service by electric motors on power furnished by the Montana Power Co.

John D. Ryan at the head of "Amalgamated" properties says that the power company has already contracted with the Chicago, Milwaukee & St. Paul R.R. to furnish power for some four or five hundred miles of the line and yet less than a quarter of the possible water power in Montana has been utilized.

This hydro-electric development is a great competitor

is responsible for this decrease in tonnage, 30 per cent. of the total output being mined under normal conditions during these two months. It is estimated that not to exceed 20 per cent. of the total output for 1913 has been mined in the last two months of the year.

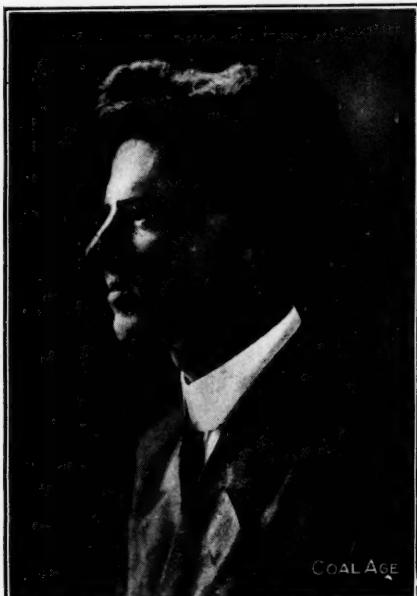
There have been in operation during the past year 105 coal mines, including a number of strip pits and small underground workings, employing on the average about 950 men during the winter and 350 during the summer. But six fatal accidents have occurred during the year. A number of small new mines were opened up during the fall of 1913, but the demand for coal has been so moderate they have not done a satisfactory business. The state

*State engineer, Bismarck, North Dakota.

has been free from any labor disturbances that could in any way affect the production.

Much valuable research work has been done at the experiment station maintained by the state under the direction of E. J. Babcock, dean of the State School of Mines. A process for briquetting has been worked out that is very promising, and the experiments with lignite as a producer of gas for power, heat and light, have been most satisfactory. It is to be regretted that a recent fire has temporarily crippled the work of the station.

A briquetting plant has recently been completed at Minot, and at this writing, operations have just begun. The success of this plant, which is the first of its kind in North Dakota, will mean much to the lignite industry.



JAY W. BLISS, NORTH DAKOTA

As soon as it is actually demonstrated on a commercial scale that lignite briquettes can be made and disposed of at a profit, abundant capital is ready to be invested in the undertaking. This will result in a development of the lignite mining business that will make it one of the big industries of the state. And North Dakota, having the largest estimated tonnage of workable coal of any state in the Union but one, cannot help but become a heavy coal producer.

The beginning of the briquetting process is considered as being the most important feature in connection with the lignite industry for the year 1913.

Ohio

SYNOPSIS—*An increase of 9 per cent. marked the progress of the coal industry in Ohio during 1913. This resulted from the greater steadiness with which the mines in operation and the men engaged worked during that year as compared with former years. The Massillon district is the only section which did not produce as much coal as in 1912.*

From all advance reports received from the several coal-mining districts in the state, the output of coal produced bids fair to exceed the output for any previous year. The tonnage for 1913 is estimated to have reached 37,

500,000 tons, or an increase of about three million over the tonnage reported for the year 1912, when the output amounted to 34,444,291 tons, which at that time was the largest tonnage recorded; in 12 years the tonnage has almost doubled itself.

According to a summary of mineral production compiled by Edw. W. Parker, of the U. S. Geological Survey, for the year 1912 the value of the mineral resources of Ohio was \$111,229,656, an increase of about \$14,000,000 over 1911. Of the mineral products of Ohio, coal and clay are rivals for first place in value of production; the production of coal in 1912 amounted to 34,528,727 short tons, valued at \$37,083,363, and the value of the clay products was \$34,811,508.

PERSONS EMPLOYED

There will probably be very little change in the number of persons engaged in the production of coal during the year 1913. There was a shortage of labor in Jefferson County during the month of November, but this was of short duration as the weather moderated, and there was somewhat of a cessation of the unusually strong demand for coal at that time; this permitted the coal companies to handle with satisfaction the orders they had on hand, and there was, therefore, no coal shortage which, for the time being, seemed to be in store for the users of this kind of fuel.

The majority of large mines worked about full time, and the miners experienced a year of unusual prosperity, not only in time worked, but in wages accruing from the steady demand for the product of their labor.

CAR SHORTAGE

The usual draw-back of car supply manifested itself during the months of October and November, and bid fair to prove a severe handicap to the trade. This would undoubtedly have been the result but for the moderating weather which the month of December brought. This condition alleviated what might have been a severe shortage in fuel supply.

REVIEW BY DISTRICTS

The Hocking district will show an increase in tonnage; the mines of this district worked steadily for the first nine months; about Oct. 1 a car shortage set in, and since that time they have worked about half time up until about Dec. 6, when conditions changed and work was again steady.

The eastern Ohio district will show a large increase as the mines worked full time, and there were no cessations except for repairs and improvements such as the building of tipples, and the installation of larger ventilating equipments.

In Jackson County the tonnage will compare favorably with that of 1912; the supply of cars was better than in former years; the Detroit, Toledo & Ironton Ry., which formerly had its drawbacks, gave better service this year.

Lawrence County will show a large increase in output over the years 1911 and 1912; at that time the large producing mines were on a strike; this was settled in November, 1912, and since that time they worked fairly well; it is estimated that the tonnage of 1912, which was 88,000 tons, will probably be increased to over 200,000 tons. The coal in this county is practically all run-of-mine.

The Massillon district, according to advance reports,

will not come up to the year 1912; there was a car shortage in this district also for more than two months, and the mines as a rule worked about two-thirds time.

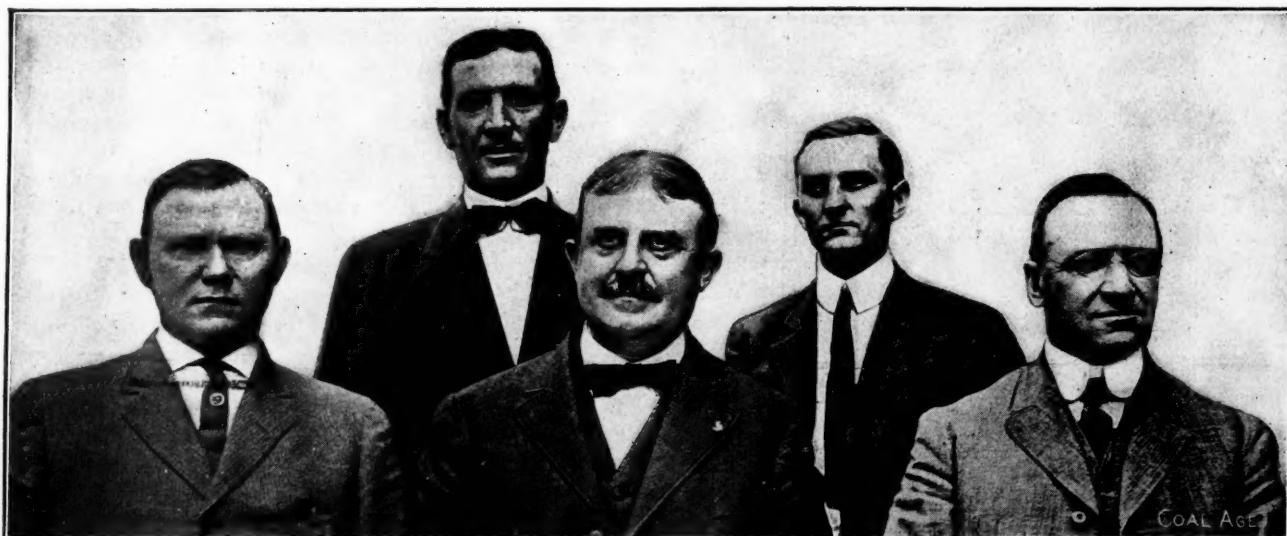
The Crooksville district is reported as showing an increase, and the mines worked more steadily than in any other year, but a shortage of cars developed in September, and the mines for two months worked about half time.

The Cambridge district, taking as the standard one of the largest coal-producing companies, will show increases, notwithstanding the severe handicap of the floods, high waters, etc.; it is estimated that this company alone will show an increase of half a million tons over the year 1912; there was also a car shortage in this district during the month of November on the Baltimore & Ohio R.R., but at the present time the mines are operating on good time.

In the Tuscarawas district, work with but few exceptions was good. At one time during the spring, cars became scarce for about five or six weeks, when the supply became normal, and everything went well until October,

was being rushed for the completion of a new motor road, and according to testimony given at the coroner's inquest, no inspection had been made of the working places by the fireboss, and a workman is supposed to have entered one of the rooms, igniting a body of gas. The repair work had cut off the ventilation and permitted the gas to accumulate. Fourteen miners were killed.

Another accident of unusual cause occurred at the Jefferson mine No. 3, Piney Fork, Jefferson County, Ohio, on the morning of June 16, which resulted later in the death of four persons who were burned severely, by the explosion of a keg of powder. A loader had a keg of powder in a mine car and was sitting on the top of it, waiting for the car to be taken into the mine; several other men were also waiting to be taken in; a loader in throwing his auger into the car, struck the keg of powder with its prong, which raised the rear part of the auger to the charged trolley wire, causing a short-circuit, and an explosion. Sixteen men were injured, four fatally.



THE OHIO MINING COMMISSION APPOINTED TO DEVISE AN EQUITABLE PLAN FOR WEIGHING COAL

On the front row, beginning on the left: State Mine Inspector J. C. Davis, Judge Crow and Prof. M. B. Hammond. In the rear: J. M. Roan, an operator, and Morris Albaugh, a miner.

when a shortage again manifested itself, noticeably on the Baltimore & Ohio. The Pennsylvania gave much better car service, but the mines located on this road only worked four days a week for several weeks. However, it is estimated that the tonnage of this district will show an increase of from 10 to 12 per cent. over the previous year.

The tonnage of Muskingum County is estimated to be about the same as for the year 1912; the car service, with but few exceptions, was good; the flood was a severe handicap to the mines of this county, and caused them to be idle for a long period of time; however, the mines that were not so affected, operated on better time than the previous year.

ACCIDENTS

The year 1913 will record a larger number of accidents than any year since the creation of the mining department. While it is true that there will undoubtedly be a much larger increase in tonnage, the accidents have increased out of all proportion to what they should.

An explosion occurred in the Imperial No. 3 mine, operated by the Imperial Mining Co., Noble County, Ohio, on the evening of May 17, 1913, between the hours of six and seven, at which time 27 men were in the mine. Work

their deaths occurring within two weeks after the accident.

The fatal accidents up to Dec. 23 number 163, and by the close of the year they will probably total 170. This would represent an increase of 25 per cent. over the number of fatalities reported during 1912, when 136 occurred. Of this number over 90 will be due to falls of roof and coal; 10 to shocks from electricity; 28 were due to mine cars, an increase of 116 per cent.; six were due to explosions of powder; 15 to explosions of gas; five to mining machines and motors, and seven to miscellaneous causes; at the present writing, falls of roof and coal will show a decrease in number as compared with the year 1912.

MINE FIRES

Mine fires occurred at two of the large producing mines of the state during the year, but with good management and careful judgment, no serious effects were caused by either, except the loss of the operation of both of them, as the fires necessitated the complete sealing of the mines. The first fire occurred at the New Pittsburgh No. 7 mine, and was supposed to have originated from a short-circuit on the trolley line, caused by a fall of roof. Arrangements were made immediately after locating the fire to seal the

mine, which was effectively completed in about four days time. The fire originated on Mar. 30, and on June 7 arrangements were completed for reopening the sealed portion of the fire territory; while no fire was discovered, an excessive heat was found in the fire zone, and it was decided to reseal that section of the mine. On Nov. 29, another inspection was made of this territory, and the fire found to have been entirely extinguished and permission was given to the management to clean up this portion of the mine and operate it with open lights.

The second mine fire occurred on Nov. 1 at mine 301, operated by the Sunday Creek Co., of Columbus, and located in Perry County, Ohio. This fire was located about 1000 ft. from the main opening, and it was considered useless to try to extinguish it, and work* was begun at once to seal it and allow it to smother out. While the work of sealing the mine was in progress, several explosions took place, and the work was considered too dangerous and hazardous to continue. Orders were then given to commence to seal the mine from the outside, as it was connected with mine 302 operated by the same company, and was threatening to endanger that property also; this work was temporarily done on the night of Nov. 9, and the permanent stoppings were completed on the inside on Nov. 12.

MINE-RESCUE CAR

The general assembly of the year 1913, provided funds for the purpose of purchasing and equipping a mine-rescue car for emergency use in case of mine explosions, fires originating in mines, or for any emergency that might arise and the car will probably be ready for use in the early part of 1914.

LEGISLATION

Several new laws were enacted by the same legislature affecting the mining industry of the state, and several amendments to old laws were also passed at that time, the most important of which were one relating to the right of action in case of death in a mine; another to the use of calcium carbide in the mines and a third relative to the approaching of abandoned workings. Another most important act of this legislature was the enactment of a statute creating the industrial commission of Ohio, superseding the state liability board of awards, abolishing the department of commissioner of labor, statistics, chief inspector of mines, chief inspector of work shops and factories, chief examiner of steam engineers, board of boiler rules, and the state board of arbitration, merging certain powers and duties of said departments to said industrial commission of Ohio, and granting said commission certain other powers, and repealing a number of sections formerly in force. This commission took charge of these several departments on Sept. 1, organized the work and will from now on administer and superintend the work formerly done by these different state departments.

JOINT RESOLUTION H. B. No. 38

Perhaps no question brought to the attention of the legislature in a number of years so vitally interested the persons connected with the mining industry of the state as Senate Bill No. 23, which related to the method of weighing coal at the mines throughout the state; the agitation both pro and con became so animated, that it resulted in the passage of a joint resolution providing for

the appointment of a commission to investigate an equitable method of weighing coal at the mines, and their report to be filed with the governor by Dec. 1. The commission was appointed and on Dec. 17 filed with the governor an exhaustive report covering its investigations of coal mining in this and other states, and recommending that miners be paid on the run-of-mine basis.

This commission also recommended legislation for the purpose of conserving our coal resources; for the appointment of safety mine foremen; for the regulation of solid shooting; to provide for emergency supplies, and to regulate the weighing of coal at the mine. This report, and the other legislation aforementioned, will be placed in the hands of the general assembly by Governor Cox, at a special session to be called in the early part of the month of January. New wage scales are to be made in April, so it would be difficult at this time to give with any degree of accuracy just what the state of the coal trade will be for the year 1914.

Oklahoma

BY EDWARD BOYLE*

SYNOPSIS—The closing months of 1913 showed a satisfactory increase over the production of the preceding year. Not only has the total output been increased, but the percentage of pea and slack has been reduced, securing a correspondingly greater amount of the larger sizes.

As the year of 1913 drew to a close the production of the mines became more gratifying, as it appeared to show a substantial increase over previous years. The output was, however, somewhat curtailed by three large producers, located in Haskell County, being idle almost the entire year. These were placed in the hands of receivers in 1912 and declared to be an unprofitable mining venture under the present scale of prices for dead work. Aside from this shutdown a few of the older mines in the McAlester field suffered a loss in production on account of a squeeze which threw them idle so far as coal production was concerned for several months. The total production for the year will reach approximately 4,000,000 tons against 3,600,000 for the year 1912 or a gain of 400,000 tons. The counties producing most of this coal are Cole, Pittsburg, Latimer, LeFlore, Haskell, Okmulgee, Tulsa and Craig. The present indications are that Pittsburg will lead in production, as in the previous year. Okmulgee County, which is known as the Henryetta field, will no doubt take second place in point of production. Okmulgee will, however, lead the state in machine-mined coal. Owing to the measures here being practically level or with but a slight pitch, machine mining is a practicable and successful method of operation in this field.

What is known as the McAlester field, or Pittsburg County, is just the reverse, having a pitch running from 25 to 45 deg., which makes machine mining impracticable or almost impossible. This year, however, will show a marked decrease in pea and slack coal over previous ones with a corresponding increase in lump and nut coal. The miner is, therefore, taking more care and exercising more judgment in preparing his product for market.

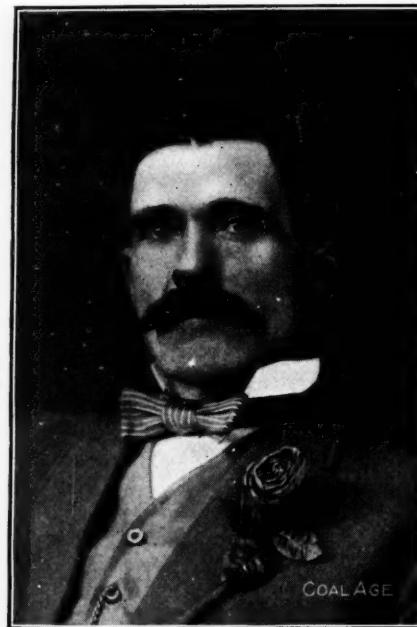
*Chief mine inspector, McAlester, Okla.

The total production of the different grades of coal produced in the last fiscal year which ended June 30, 1913, was as follows:

Lump, 792,995 tons; nut, 194,178; pea and slack, 532,927; run-of-mine, 2,277,799; total, 3,797,899 tons.

The gain and loss of the different grades of coal mentioned above over the year ending June 30, 1912, is as follows: Lump gained, 83,460 tons; nut gained, 13,271; mine run gained, 795,110; total, 891,841; pea and slack loss, 32,927 tons.

Oklahoma is now profiting by the strike in Colorado, which has been in the past, one of Oklahoma's strong competitors. Oklahoma coal is of good grade, which averages about 60 per cent. in fixed carbon. Several veins make excellent coke, many ovens having been built in this field but for several years these have been idle. There is no present indication of resumption of the coke industry



EDWARD BOYLE, OKLAHOMA

in this field. There has been practically no changes in operating companies in the past year and but few new developments. Almost all land in Oklahoma containing coal is segregated by the National Government and leased through the Secretary of the Interior and for several years the leasing of coal lands has been discontinued.

As this is a very dangerous field almost all mines generating large quantities of gas and the dust being of a highly explosive nature, the decrease in fatal accidents in the past year over previous periods is highly gratifying and indicates better management and regard for the mining laws. The calendar year shows the death list to be 23. These met their death from the following causes: Falling rock, 11; powder burns, 3; windy shot, 1; runaway trip, 1; killed by cars, 4; gas explosion, 1; caught by cave-in in air shaft, 1; electrocuted, 1. The total number of non-fatal accidents was approximately 94. The total number of men employed both under and above ground was 9000.

The present outlook is considered bright and extensive improvements are anticipated during the coming year.

Pennsylvania

BY FRANK HALL*

SYNOPSIS—The production of the anthracite region has increased 6½ per cent. and of the bituminous fields 4½ per cent. Business has been brisk most of the year.

¶

The great coal-producing territory of Pennsylvania maintained its annual habit of breaking all previous records of production. A careful estimate shows that the output in the bituminous region will reach the vast proportions of 168,000,000 net tons, and in the anthracite region about 90,000,000 net tons, making a total of 258,000,000 net tons. This amount equals about one-half the entire production of the United States and one-fourth the tonnage of the world.

The production in the anthracite region for 1912 was 84,426,869 net tons, and in the bituminous region 160,830,492 net tons.

PRODUCTION BY DISTRICTS

The estimated production in the anthracite region for 1913 was as follows:

| District. | Anthracite Gross Tons | District | Bituminous Net Tons |
|-----------|--------------------------|----------|------------------------|
| 1. | 3,976,000 | 1. | 5,000,000 |
| 2. | 4,974,000 | 2. | 8,900,000 |
| 3. | 3,217,000 | 3. | 3,600,000 |
| 4. | 4,300,000 | 4. | 4,800,000 |
| 5. | 3,450,000 | 5. | 6,000,000 |
| 6. | 4,580,000 | 6. | 6,000,000 |
| 7. | 5,500,000 | 7. | 6,000,000 |
| 8. | 4,132,000 | 8. | 5,000,000 |
| 9. | 5,116,000 | 9. | 7,500,000 |
| 10. | 5,025,000 | 10. | 4,750,000 |
| 11. | 5,500,000 | 11. | 8,300,000 |
| 12. | 2,883,000 | 12. | 6,066,000 |
| 13. | 2,275,000 | 13. | 4,000,000 |
| 14. | 3,150,000 | 14. | 7,000,000 |
| 15. | 2,790,000 | 15. | 6,000,000 |
| 16. | 2,992,000 | 16. | 7,000,000 |
| 17. | 4,637,000 | 17. | 6,010,000 |
| 18. | 2,750,000 | 18. | 4,500,000 |
| 19. | 3,150,000 | 19. | 8,825,000 |
| 20. | 2,400,000 | 20. | 6,300,000 |
| 21. | 3,516,000 | 21. | 7,000,000 |
| | | 22. | 5,000,000 |
| | | 23. | 6,750,000 |
| | | 24. | 6,070,000 |
| | | 25. | 6,010,000 |
| | | 26. | 5,944,400 |
| | | 27. | 4,860,000 |
| | | 28. | 5,700,146 |

The coke tonnage is estimated at about 21,000,000 tons. The number of employees in the anthracite region for 1913 is estimated at 180,000, and in the bituminous region at 185,000.

ACCIDENTS

The number of fatal accidents in the anthracite region was 615, and of nonfatal accidents 1238. There were 526 fatal accidents in the bituminous region and 1164 nonfatal accidents. In both regions a regrettable increase in fatalities is recorded.

Two disasters of the year were of a serious character and resulted in the loss of many lives. On Aug. 2 an explosion occurred at the Brookside colliery of the Philadelphia & Reading Coal & Iron Co., in which 20 persons were killed. This explosion has never been satisfactorily explained. Various theories have been advanced as to its cause, but it still remains a mystery. The tragic aspect of this disaster is accentuated by the fact that while only two men were killed by the original explosion, 18 others (including the superintendent, the foreman, nine rescuers and seven tunnelmen) were killed by a second explosion caused by the tunnelmen igniting the gas

*Deputy chief, Department of Mines, Harrisburg, Penn.

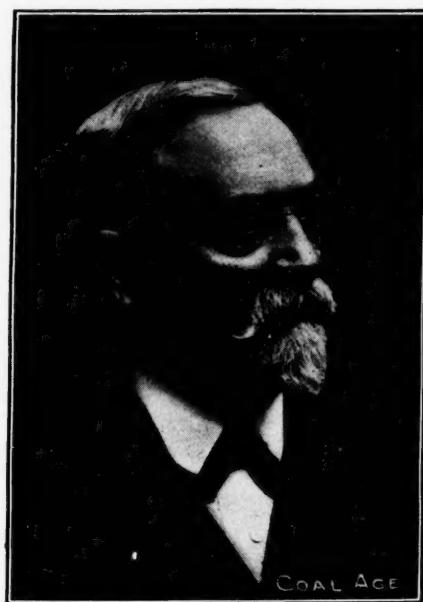
released by the fall of a stump pillar following the first slight explosion.

In the bituminous region a disaster of far greater magnitude occurred at the Cincinnati mine of the Monongahela River Consolidated Coal & Coke Co. on Apr. 23, in which 97 lives were lost. This was an explosion of gas that had accumulated from a clay vein and was ignited by the naked light of a miner.

LABOR TROUBLES AND CAR SUPPLY

In the anthracite region there were strikes of brief duration in 13 of the districts. Many of these were what is known as "button" strikes. A strike of this kind has for its whole cause the objection raised by some of the employees to the employment of a few men, who do not wear the button, which is worn by members of the United Mine Workers of America as a distinctive badge. In some cases, the failure of even one man to wear a button will precipitate a strike.

In the bituminous region there were slight labor troubles and disputes in 11 districts. In both regions



JAMES E. RODERICK, PENNSYLVANIA

the labor troubles and the occasional shortage of car supply probably reduced the production by 500,000 tons.

SAFETY CONDITIONS

There is a very evident and general desire on the part of the operators to look after the safety of their employees. One prominent phase of this work is the establishment of hundreds of first-aid squads and of many rescue corps, the members of which are selected men, carefully and thoroughly drilled and supplied with the latest and most complete outfits for the successful conduct of this important work.

OUTLOOK FOR 1914

In making predictions as to the trade in 1914, the inspectors as a rule are optimistic and a majority of them look for an increased tonnage. It is a difficult matter, however, to forecast the future of the coal industry. Its prosperity is so closely connected with the prevailing industrial conditions that a depression in almost any

line of commercial activity is likely to prove disastrous. Just what effect federal legislation will have on the great corporations of the country cannot be predicted with any degree of certainty, but undoubtedly there will be a more or less protracted continuance of the present unsettled conditions, and the coal production will naturally be curtailed thereby.

What results may follow from the direct mining legislation recently enacted in other states, is another problem that will confront the mining people in Pennsylvania. But notwithstanding the acknowledged uncertain elements that will be factors in the near future, there is a general feeling of hopefulness pervading the trade.

xx

PENNSYLVANIA, ANTHRACITE

SPECIAL CORRESPONDENCE

SYNOPSIS—It is estimated that the 1913 anthracite production will exceed that of 1912 by about five million tons. Many improvements have been introduced, including cutting machines, steel mine timber, concrete dwellings, etc., that will render the year memorable.

xx

Notwithstanding the popular notion that the number 13 is a "hoodoo," the year 1913 just passed may be considered as one of the most successful in the history of the anthracite-coal industry. In spite of the unseasonable weather during the latter part of the year, which seriously affected the consumption, it is estimated that the production for the entire year owing to the heavy shipments of the early months will pass that of 1912, by at least 5,000,000 tons.

This year will be remembered not so much for its production record, however, as for the renewed endeavor to reduce mine accidents and fatalities. Mine disasters on a large scale have never been common in this region. The past year has been marked by a development of modern practice in mining and the co-operation of the coal companies in bringing to bear concerted action to promote the education, safety, efficiency and welfare of the miners.

The advancement in the science of mining has been marked by the adoption of concrete and other fireproof materials in the construction of breakers and buildings, and in the substitution of steel and concrete for wooden timber underground. For the first time in the history of the anthracite industry, undercutting machines have been put into operation by several companies, and the increased production has proven them to be successful. The installation of several large subterranean pumping plants to remove millions of gallons of water per day in order to reclaim coal that heretofore had been thought irredeemable is another step forward in the development of the industry.

The increased use of electricity in and about the mines is also quite noticeable. Several of the older operations have added generators to their power equipment and some of the new ones to be opened up next year have already been designed to use electricity exclusively.

There have been but few serious labor troubles affecting the production of coal in Pennsylvania during the past year. Numerous local difficulties known as button strikes have occurred, but for the most part these were of short duration. In fact, the number of these petty button strikes during 1913 has been greater than all the similar

cessations during the previous 8 or 10 years put together. The effect of these small strikes on the coal output was noticeable but counterbalanced to a great extent by the slackness in consumption and demand due to the mild winter.

Numerous labor-saving, time-saving and safety devices added during the past 12 months have not only increased economy in production and preparation, but have also materially reduced the number of accidents in and about the mines.

There were more institute meetings, mining congresses and safety conventions held in 1913 than in any other single year in the history of the coal-mining industry. This is strongly indicative of the coöperative spirit of the numerous coal companies to promote their mutual welfare. Though the results already attained by this "get-together" attitude has been gratifying, it is hoped that the progress of the ensuing year will be still greater, for it will not be hampered by the peculiar difficulties which have been recently overcome.

To increase the production of coal without a coincident increase in the number of accidents has been the aim of the extraordinary efforts put forth by the coal companies in promoting the efficiency, safety and welfare of their employees. Some companies have appointed "Safety Engineers" to work in conjunction with their operating staff. Some have established "Efficiency and Safety Committees" to assist their inspecting department; some have increased their supervising force by adding a large number of assistant foremen or sub-foremen whose duties consist of keeping a double lookout with a view to accident prevention.

One firm has taken steps to educate its employees by publishing at its own expense an excellent magazine on mining. Lantern slides and moving pictures have also begun to play a prominent part in the promotion of the "Safety First" or "Accident Prevention" movement that is now popular everywhere. First-aid and mine-rescue work has also made considerable progress, and it is gratifying to note from the many contests that the men engaged in this excellent work have become highly proficient. Outside hospitals have been erected at nearly all the collieries in the anthracite field, similar to those built under ground some years ago.

The bathhouses, messhouses and clubrooms erected at many collieries throughout the coal region have added considerably to the comfort of the mine workers. In one locality concrete dwellings have been built on the Edison plan and are rented to employees at an exceedingly low rate. All these improvements indicate that progress has been made in the right direction and that mining of coal has been made much safer than it has ever been heretofore.

South Dakota

B. OTTO ELLERMAN*

SYNOPSIS—South Dakota coal mines are of such little importance that the inspector has no record of their output.

I have received frequent inquiries regarding the coal mines of this state and from what information I can gather, they are as yet few in number and small. Meade,

*State inspector of mines.

Perkins and Harding counties seem to have small coal properties and these are worked during the winter months only, some employing as many as eight men. The coal is a very poor grade of lignite but it makes a satisfactory fuel for the homesteader and rancher. The price obtained is \$4 per ton at the property and there is a ready market for the entire production. As yet I have been unable to gain satisfactory data as to the total output and the number of men employed by the industry.

■

Tennessee

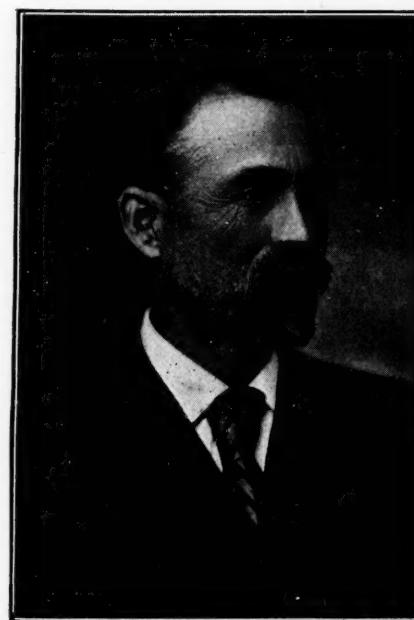
BY GEORGE E. SYLVESTER*

SYNOPSIS—Conditions in Tennessee have been about normal and the coal production may be roughly estimated as 6,600,000 tons. There have been no labor troubles, no serious disasters and only 33 fatal accidents during 1913.

■

As to the coal industry in Tennessee in 1913, it may be stated in a general way that normal conditions were maintained.

With the data at hand at present the output cannot be accurately stated; it probably did not vary materially



GEORGE E. SYLVESTER, TENNESSEE

from that of the year before, and might be roughly estimated at about 6,600,000 tons.

There appears to have been a slight falling off in the amount of coke produced, but as this tonnage is small, the total is quickly affected by a variation in the output of one or two of the principal operations.

There were no labor troubles reported during the year. Many of the mines, especially in the eastern district, report car shortage, and the time lost for this reason, especially in the busy season, was a serious handicap to a number of the mines.

The coal market in this state is largely local, and the mild weather of the fall and early winter kept the market from being as brisk as usual.

There were no serious mine disasters during the year. The number of fatal accidents which occurred was 33.

*Chief mine inspector, Nashville, Tenn.

The larger part of these were attributed, as usual, to falls of slate or coal. Many were classed as unavoidable, or due to the carelessness of the miner. The number while considerably larger than that of last year, which for some reason was abnormally low, does not vary greatly from that of the average of the state in the past.

There has been increased interest in first-aid work among the miners, more especially in the eastern coal field, and a highly successful first-aid contest was held at Knoxville in the fall. This was promoted largely by the miners themselves, through the Society of Tennessee Mine Foremen.

Legislation was enacted during the year requiring the keeping of first-aid supplies at mines, also in regard to the maintenance of mine-rescue corps. No change was made in the general mining law.

Texas

BY ISIDORE J. BROMAN*

SYNOPSIS—*The higher price of oil has made the coal business phenomenally good. The fatalities number about one per thousand men employed.*

The year 1913 has been the most prosperous year in the history of coal mining in this state. The rise in the price of crude petroleum has practically eliminated competition from this source and the growing sentiment in favor of lignite as a cheap but valuable fuel has stimulated its production. In spite of the unsettled conditions on the border, which have caused a temporary decrease in the production at Eagle Pass and Laredo, the output for 1913, generally speaking, will be considerably in excess of that of last year, this increase being due to better market conditions and more up-to-date methods of mining.

BITUMINOUS COAL

I estimate the production of bituminous coal for this year to be about 1,300,000 tons, or about 150,000 tons greater than the production for 1912. The mine value of this output will approximate \$3,000,000.

The bituminous mines are located in Eastland, Erath, Maverick, Palo Pinto, Webb, Wise and Young Counties, these mines employing about 4000 men. The largest mining company, the Texas & Pacific Coal Co., employs about 1500 miners with an average daily production of nearly 2600 tons. Union labor, exclusively, is employed in the bituminous field. There have been no labor troubles as all differences are settled by arbitration.

LIGNITE

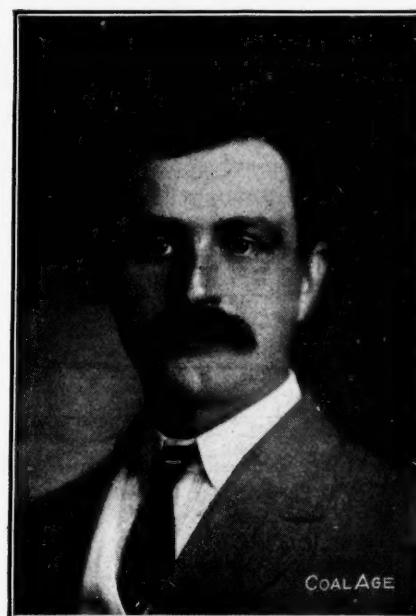
The production of lignite may be estimated in round numbers at about 1,000,000 tons with a mine valuation somewhat over \$1,800,000. About 1600 men are employed. The lignite mines of Texas are located in the counties of Bastrop, Hopkins, Houston, Lee, Leon, Medina, Milam, Rains, Robertson, Titus, Van Zandt and Wood. The largest mines are located in the county last mentioned.

The labor employed in the lignite mines is largely Mexican and negro. There has been a great scarcity of labor in the lignite field and production has suffered from this cause and from the unreliable class of labor employed. Much damage was done to the lignite mines and the rail-

roads by the terrible floods which visited Texas during the fall.

ACCIDENTS

As regards the safety of mining the state of Texas can show a very good record. During the year 1912 the percentage of fatalities per 1000 men employed was 1.2. The percentage of fatalities for the present year will



I. J. BROMAN, TEXAS

probably not be in excess of one per thousand men employed.

During a heavy rain which caused the overflow of a creek and a cave-in, one mine in the Rockdale lignite field was partly flooded with water, imprisoning eight men. After heroic efforts seven miners were brought out alive after having been entombed six days. This is the only accident of the kind in the history of coal mining in Texas.

The average mine operator in this state is willing to do more than is legally necessary to make his mines safe and the enforcement of the law is accomplished with little difficulty.

Generally speaking, with improved mining methods, better market facilities and increased demand for Texas fuels by the industries of the state the outlook is good for a steady increase in the production of Texas coal.

■

Utah

BY J. E. PETTIT*

SYNOPSIS—*Output of coal increased 6.5 per cent., while coke production fell off 9.4 per cent. New mines made good showing. Sixty mining machines were installed. Outlook is for a banner year.*

■

The coal output for the state of Utah for the year 1913, is 3,289,255 short tons, an increase of 200,899 tons, or 6.5 per cent. over last year. The production of coke is 314,694 tons, compared with 347,356 tons for 1912, or a decrease of 9.4 per cent.

*State mine inspector, Austin, Tex.

*State mine inspector, Salt Lake City, Utah.

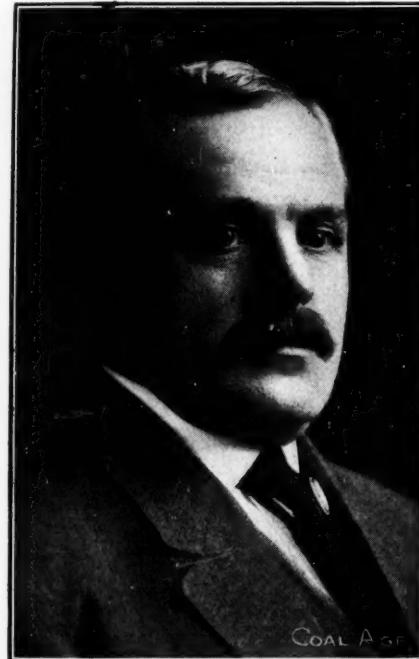
The main factor responsible for the decrease of the coke output was the disastrous fire, which occurred at Sunnyside, on May 26, when the No. 2 bridge and coal-crushing plant of the Utah Fuel Co. was burned. This accident caused a loss to the company of about \$60,000, necessitating the working of the two mines, one by day and the other by night shift, and crushing the coal over an improvised bridge. The consequent unhandy manner of handling coal also cut down the output of the Sunnyside mines at least 100,000 tons.

A shortage of railroad cars in the fall also contributed to the small per cent. of increase of coal, but during the winter months no shortage of cars has so far been experienced.

Four thousand, six hundred fifty-nine men have been employed in and around our coal mines and coke plants during the year, showing an increase of six hundred seventy-one men.

NEW OPERATIONS MAKE GOOD SHOWING

While a good increase has been shown in the production of the old producing mines, some of the new operations



J. E. PETTIT, UTAH

have done well, notably the Storrs mine of the Spring Canyon Coal Co., with an output of 116,000 tons; the Willow Creek, or Castle Gate No. 2 mine, with an output of approximately 54,000 tons, and the American Fuel Co., with 50,160 tons.

Seventy-six new coke ovens have been built at Sunnyside during the past year and are now in operation, making a total of 726 beehive ovens now in operation. Seventeen fatal accidents occurred during the year, or 3.64 men per thousand. Twelve accidents occurred in the mines, and five on the surface at or near the mines. This is one less fatal accident than last year, when 16 men were killed in the mines and two on the surface. As a result of the fatalities this year, there are five widows and six fatherless children. There were also 39 serious and 60 minor accidents.

There were also 39 serious and 60 minor accidents.

The hydrocarbon output was 23,930 tons, a decrease of 9697 tons, or 2.8 per cent., due to the limited demand for this product in the Eastern market.

COMING YEAR TO SHOW LARGE INCREASE IN OUTPUT

The coming year is expected to show a larger increase than ever before in the production of coal. The Standard Coal Co., situated in Spring Cañon, expects to begin shipments of coal by Feb. 1, their tramroad, tipple, and railroad connections being practically completed. The Carbon mine of the Panther Canyon Coal Co., owned by the Sharp interests, has its tramroad, tipple and side tracks 90 per cent. completed, and will produce a thousand tons per day before the end of the year. The Cameron mine, one mile north of Castle Gate mines, will reach coal through a pair of slopes driven in rock 720ft., by Jan. 15, and will be a steady producer, with F. N. Cameron as owner and manager. The Ketchum Coal Co. will also commence operations during the coming year.

Some 60 mining machines of various standard types have been installed in the mines of the state during the year, and over one-third of the output has been undercut by electric and air machines. No labor troubles have occurred during 1913, and conditions as far as can be judged locally are favorable for a prosperous coal-mining year in 1914.

¶

Washington

BY JAMES BAGLEY*

SYNOPSIS—The production of coal in Washington reached its maximum in 1910 since when it has slightly decreased. There have been but few changes in mine ownership and but 19 fatal accidents during the year.

¶

In the year 1910 the coal production of Washington broke all previous records, reaching a total of 3,979,569 tons. Since that time there has been a slight decrease, owing to the substitution of oil for fuel on the railroads and many of the steamers running out of Puget Sound ports.

The reports received for the first 11 months of the year 1913 and a conservative estimate of the production for December added to this places the tonnage for the year at 3,677,946 tons, an increase over the previous year of 331,000 tons.

Coal is mined in six counties of the state, Kittitas County showing the largest production with King County a close second; Pierce, Thurston, Lewis and Whatcom Counties rank in the order named. Coke is manufactured in Pierce County only and will show an increase of about 25,000 tons over the preceding year, its production being approximately 49,000 tons in 1912.

There has been little change in the ownership of properties, the largest transaction being the purchase of the Summit mine located near Cle Elum in Kittitas County by the Roslyn Fuel Co. This is being reopened.

There have been no strikes of any importance during the year, the mines at Renton and Bayne still working on the open-shop plan. There has been no change in the wage-scale agreement, which runs for two years, and does not expire until Sept. 1, 1914.

*State mine inspector, Seattle, Wash.

There have been 19 fatal accidents for the first 11 months of the year, the largest percentage of these being from falls of rock and from mine cars. The most serious accident was an explosion of gas at the Divide mine in Lewis County on Nov. 6 in which three men met their death.

The legislature of 1911 provided for the appointment of a commission to revise the laws regulating the operation of coal mines. This commission compiled a code, which was submitted to the 1913 legislature, which failed to include it among the laws passed. This is to be deplored, as both the miners and operators were represented on this commission, and it was supposed that they had compiled a code that satisfied both.

Most of the large companies are taking an interest in rescue and first-aid work, and most of them have rescue apparatus at their mines. The Bureau of Mines foreman for the Seattle station goes to the different mines to train men in this work and in this way it is believed better results are obtained than by waiting for the men to be sent to the station.

32

West Virginia

BY EARL A. HENRY*

SYNOPSIS—In 1913 the production in West Virginia probably increased 8½ per cent. despite the important labor troubles. The development in this state is so rapid that a record increase in output is expected this year.

32

From the records at hand in the Department of Mines of West Virginia, the total production of coal in 1913 in this state was approximately 71,700,000 tons. There were 3,000,000 tons of marketable coke produced. Thus in the year 1913, the coal production increased about 5,600,000 tons, and the output of coke, 2,000,000 tons. It will be seen from the above figures that the production in this state has materially increased, notwithstanding the general unrest of labor.

EFFECT OF STRIKE ON TONNAGE

During a period practically embracing all the first nine months of the year, there was a strike in the Kanawha field in the mines along the Chesapeake & Ohio Ry. Moreover there was a large reduction in tonnage in the New River and Logan County fields because of the unsettled labor conditions arising out of the strike in the Kanawha field proper. Had it not been for this strike and labor troubles of like kind all along the lines of the Chesapeake & Ohio Ry., as well as in other sections of the state, the production of coal for the calendar year 1913 would have been nearly 70,000,000 tons. In other words, the labor troubles caused the production to be about 6,000,000 tons lower than it would otherwise have been.

This increased production of 1913 over that in 1912 resulted from several causes: Increased development of the coal territory, added improvements and an attempt to utilize every opportunity to produce a maximum tonnage in response to the sustained strength of the coal market. The market for West Virginia coal has increased in the last 18 months and the prices for all grades of coal have steadily and substantially increased.

It is somewhat generally believed by the operators that West Virginia coal will never be sold so cheaply in the

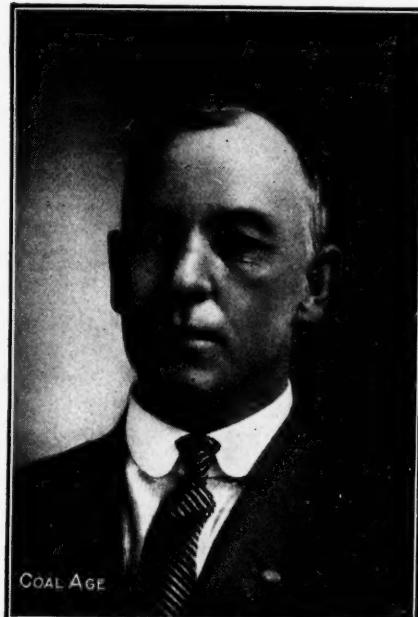
*Chief of Department of Mines, Charleston, W. Va.

future as in the past. It is thought that the producers of coal have begun to realize what it costs to produce a ton of their product and they are not disposed to sell it at a figure lower than it costs them.

REMARKABLE DEVELOPMENT IN STATE

The development of new mines in West Virginia in the past 12 months is remarkable. At the present time, in Logan County alone, there are about 25 new mines being opened in the Winifrede, Island Creek, and No. 2 Gas seams, and it is estimated that within the next seven or eight months practically every one of these 25 new mines will be shipping coal, thus adding most materially to the production of 1914.

In Raleigh County, there is also extensive development and the mines in that section, especially those on the Winding Gulf branch of the Virginian Ry. are rapidly increasing their output. The tonnage originating on the Virginian Ry. in West Virginia is now nearing the half million mark and with the new mines being opened the production should in 12 months be doubled. Extensive



EARL A. HENRY, WEST VIRGINIA

developments are also being made in the Pocahontas and Fairmont fields.

As practically 90 per cent. of the coal produced in the state passes beyond its boundaries, the prosperity of the coal industry in the state depends entirely on adequacy of transportation facilities. The railroads, especially the Chesapeake & Ohio, have failed in some cases to keep pace with the mining development.

The Coal & Coke Ry., which passes for 200 miles through a rich country, has never equipped itself to handle the traffic which would naturally develop if facilities were assured. For this reason this road, which could have made its contiguous territory one of the most important coal fields of West Virginia, now passes over coal lands the greater part of which are undeveloped.

WHAT WEST VIRGINIA MIGHT DO

There are working in and around the mines of West Virginia approximately 75,000 men, and there are about

900 coal mines belonging to approximately 400 different companies. There is sufficient territory already developed in these 900 mines in which to place 30,000 more men, who could increase the output of coal at least 20,000,000 tons per year. Of course, there would have to be an improvement in the car supply. In my opinion, within the next 18 months or two years, when the mines now developed have been put into completed operation, West Virginia will have place, not only for the 30,000 men to which I have referred, but for 10,000 more. If this accretion of mining force and a like improvement of railroad facilities were secured, West Virginia could double its production in the next four years.

Judging from the figures already on hand, the West Virginia coal-mining death toll will be approximately 310 lives. A little over 200,000 tons has been mined per life lost. There have been no serious mine accidents. The majority of deaths and injuries have been caused by falls of roof. The next most important cause is electricity and the third cause in order of frequency is mine cars. The careless handling of these and the jumping from trips in motion cause many accidents.

Wyoming

BY GEORGE BLACKER*

SYNOPSIS—The production of Wyoming fell nearly 5 per cent. in 1913. The death rate dropped markedly. There were no labor troubles and no disasters.

Though only two less men were employed in 1913 than in 1912, the tonnage dropped from 5,500,253 to 5,229,817. It did not, however, fall below the output of 1911. The number of men killed fell from 35 to 21 and the number of injured from 120 to 65. Even the deaths from falls of roof and coal dropped 50 per cent.

TONNAGE AND MEN EMPLOYED—BY COUNTIES

| County | Tonnage | Men employed |
|-----------------|-----------|--------------|
| Uinta..... | 42,243 | 101 |
| Lincoln..... | 1,849,113 | 1,839 |
| Carbon..... | 605,553 | 577 |
| Sweetwater..... | 2,732,908 | 3,153 |

SUMMARY OF CCAL PRODUCTION

| | 1911 | 1912 | 1913 |
|---------------------------------------|-----------|-----------|-----------|
| Total tons of coal produced..... | 4,865,761 | 5,500,253 | 5,229,817 |
| Employees in and about the mines..... | 5,446 | 5,672 | 5,670 |
| Fatal accidents..... | 22 | 35 | 21 |
| No. fatal accidents..... | 97 | 120 | 65 |
| Coal mined for each life lost..... | 221,170 | 157,150 | 249,038 |
| Employees for each life lost..... | 248 | 162 | 270 |
| Killed per thousand employed..... | 4.1 | 6.1 | 3.7 |

CAUSES OF DEATHS.

| | 1911 | 1912 | 1913 |
|-----------------------------------|------|------|------|
| Gas explosion..... | 1 | 0 | 0 |
| Dust explosion..... | 0 | 7 | 0 |
| Falls of roof (coal or rock)..... | 14 | 18 | 9 |
| Falls of coal not in roof..... | 0 | 6 | 2 |
| Mine cars and haulage motors..... | 3 | 3 | 7 |
| Premature blasts..... | 3 | 0 | 0 |
| Powder burns..... | 1 | 0 | 0 |
| Falls of timber..... | 0 | 1 | 0 |
| Machines..... | 0 | 0 | 1 |
| Electrocutions..... | 0 | 0 | 2 |

The year ending Sept. 30, 1913, was entirely free from labor troubles and disasters. Labor has been in constant and steady demand. The percentage of fatal accidents has decreased to a point lower than at any time during my official term as inspector of coal mines. I am receiving the active coöperation of the mine managements in all precautions I recommend them to take. Not only do they coöperate with me, but many of them go farther and

*Inspector of coal mines, district No. 1, Wyoming, Cumberland, Wyo.

take the initiative in devising means for reducing injuries and fatalities to a minimum. This is notably so with some of the larger companies, which are sparing no expense to bring about conditions of safety.

CONCRETE STOPPINGS

The life and well being of a coal mine, might be truly said to depend upon the character of its stoppings. If they are built improperly, if they are frail and leaky, then they cannot answer the purpose for which they were intended. The ventilation, and, therefore, the safety of the mine can only be maintained by building the stoppings in accordance with the best methods, and the material used in their construction should be such as will require no more attention during the life of the mine. Such stoppings can be constructed easily and cheaply, by pouring concrete into a form made of props and boards erected in the crosscut. These can be removed after the mixture has had time to set. These stoppings are being introduced into some of the mines and are proving to be entirely suitable. The Union Pacific Coal Co. has purchased a car, which is being equipped in the same manner as the rescue cars belonging to the government. Should an accident occur in any of the mines along the Union Pacific R.R. this car will at once be available, together with a splendid team of trained workers, under the direction of a capable man.

EXPLOSIVES

Much experimenting has been done with permissible powders with varying results. When the coal is fragile or brittle, the force of the blast has the effect of shattering it into slack and thereby rendering it unfit for commercial purposes. On the other hand, a hard, tough coal is best mined with such high-powdered explosives, because more force is required.

Some companies are extremely lax in their manner of handling powder. I have seen many kegs of black powder and fully 20 sticks of giant powder together with a box of caps lying in a crosscut, unprotected. Such a practice is reprehensible.

The Sydney Coal Fields; Cape Breton, Can.

In his report for "The Coal Resources of the World," D. B. Dowling states that: The Bridgeport mines have galleries on the Phalen seam extending over a mile from the shore of Indian bay, and mines at Table head have workings one and a quarter miles beneath the sea on the Hub seam. On this bed, at a distance of a mile from the shore, small rolls or undulations parallel to the coast were passed through. These are the only disturbances in the regularity of the measures and it therefore seems possible to extend the workings everywhere to the limits of haulage and ventilation. In the estimate of the amount of coal, the limit for probable reserves is fixed at 3 miles from shore and that for possible reserves at 5 miles."

The moisture runs from 2.4 to 5.4 per cent. in the mine and from 1.6 to 4 per cent. after air drying. The dry coal has from 34.7 to 37.3 per cent. of volatile matter and the fixed carbon varies from 53 to 59.5 per cent., while the ash is extremely variable, running from 4.8 to 12.3 per cent., the sulphur being included in the estimate. This sulphur runs between 1.8 and 6.4 per cent., but excluding the Gowrie seam, the average is slightly over 2.4 per cent.

Foreign Coal Production

British Columbia

BY E. JACOBS*

SYNOPSIS—The labor trouble in Vancouver Island caused such a shortage of coal in western Canada that the tariff revision failed to deflect the market. The Puntledge River hydro-electric project is now supplying coal mines with power.

Labor troubles in the coal mines of Vancouver Island caused a decrease in their production in 1913 of nearly 40 per cent. as compared with 1912. The coal produced in Vancouver was 1,745,193 tons (1,558,208 long tons) in 1912 and 1,078,134 tons (962,620 long tons) in 1913.

In other producing districts in the province there was an increase in output which in part offset that decrease, so that the percentage of loss in production in the whole province, as compared with 1912, was a little less than 15 per cent., the total for the two years, respectively, having been 3,388,794 tons (3,025,709 long tons) for 1912 and 2,885,313 tons (2,576,172 long tons) for 1913. The quantity of coal made into coke was larger in 1913 than in 1912, 492,902 tons (440,091 long tons) as compared with 444,534 tons (396,905 long tons), which further reduced the net total of coal sold or otherwise disposed of as such. The net output of coal in 1913 was 2,392,411 tons (2,136,081 long tons), as compared with 2,944,260 tons (2,628,804 long tons) in 1912.

The districts in which coal was mined, and the proportions of production of the various mining companies, are shown in the following table:

| PRODUCTION OF COAL IN 1913 | | |
|--------------------------------------|-----------|------------|
| | Long Tons | Short Tons |
| Vancouver Island: | | |
| Canadian Collieries (Dunsmuir), Ltd. | 562,705 | 630,230 |
| Western Fuel Co. | 218,691 | 244,934 |
| Vancouver-Nanaimo Coal Mining Co. | 100,449 | 112,503 |
| Pacific Coast Coal Mines, Ltd. | 80,775 | 90,468 |
| Total | 962,620 | 1,078,135 |
| Nicola and Similkameen: | | |
| Inland Coal & Coke Co. | 116,000 | 129,920 |
| Nicola Valley Coal & Coke Co. | 110,000 | 123,200 |
| Princeton Coal & Land Co. | 28,780 | 32,234 |
| Several smaller producers | 7,988 | 8,946 |
| Total | 262,768 | 294,300 |
| Southeast Kootenay: | | |
| Crow's Nest Pass Coal Co. | 1,040,374 | 1,165,219 |
| Hosmer Mines, Ltd. | 237,500 | 266,000 |
| Corbin Coal & Coke | 72,910 | 81,659 |
| Total | 1,350,784 | 1,512,878 |
| Gross production | 2,576,172 | 2,885,313 |
| Made into coke | 440,091 | 492,902 |
| Total production, net | 2,136,081 | 2,392,411 |

While the foregoing figures for 1913 are subject to revision, owing to the production for the month of December having to be estimated, it is unlikely there will be any considerable difference between the total of output of coal as shown above and that the revised figures will show later.

A RECORD OUTPUT OF COKE

The quantity of coke made in 1913 is estimated at 19,323 tons (285,110 long tons), all at collieries in Southeast Kootenay—252,524 tons (225,468 long tons) at the ovens of the Crow's Nest Pass Coal Co. at Fernie and Michel, and 66,799 tons (59,642 long tons) at those

of the Hosmer Mines, Ltd. The total quantity of coke made in 1912 was 296,053 tons (264,333 long tons), 245,228 tons (218,954 long tons) by the Crow's Nest Pass Coal Co. and 50,825 tons (45,379 long tons) by the Hosmer Mines, Ltd., so that both companies show an increase in 1913. It is noteworthy that the production of coke in 1913 was the largest yearly output on record in the province, the highest previous total having been that for 1905—of 304,399 tons (271,785 long tons). No information is yet available as to where all the coke made in 1913 was marketed, but it is known that both the Granby Consolidated Co. and the Consolidated Mining & Smelting Co. of Canada, the former having copper-smelting works at Grand Forks, Boundary district, and the latter a lead and copper smeltery at Trail, West Kootenay, both in British Columbia, obtain their coke supplies from Crow's Nest Pass collieries in the province, although the British Columbia Copper Co.'s smelting works at Greenwood are supplied from the International Coal and Coke Co.'s ovens, at the Alberta end of the pass.

VANCOUVER ISLAND COLLIERIES

The strike forced upon the coal miners of Vancouver Island at the beginning of May by the United Mine Workers of America has continued unbroken ever since and has necessarily interfered with the important mine development, equipment and construction work previously undertaken by three of the Island coal-mining companies. However, much progress was made by the Canadian Collieries (Dunsmuir), Ltd., with its improvements at Comox colliery, and the Pacific Coast Coal Mines, Ltd., also advanced its development and construction work at its Morden colliery, though not to the extent it would have done under favorable labor conditions. The Western Fuel Co. was much hampered by the strike, so that little progress has been made since last April toward bringing into production its new mine situated some 4 miles from Nanaimo.

CANADIAN COLLIERIES, LTD.

The Canadian Collieries, Ltd., operates two collieries, Comox and Extension. The hydro-electric power station and plant at Puntledge River was completed and has since been in successful operation. General Electric Co. equipment has been installed; transmission lines have been constructed to several mines and to the company's shops, coal washery, shipping wharves, etc., at Union Bay, and substations have been erected, and connections made at various other places for lighting purposes. A length of new railway, which cuts off the heavy grade on the old tracks, has been constructed, thus admitting of hauling to Union Bay heavier train loads than was previously practicable.

At No. 4 mine, development work has been made with the object of increasing output of coal. A new Sirocco fan was put in and ventilation of the mine improved. The old haulage steam-operated machinery is being gradually replaced by electrical installations. Similarly at No. 5 mine, steam-driven machinery has had to give way to an electrically-operated plant. No. 6 mine is still being worked by steam plant, but at No. 7, compressor, hoist, haulage plant, fan, etc., are all electrically operated; more miners' houses and other buildings have been erected, new railway sidings constructed in the yard, and many other improvements made.

No. 8 is a new line situated 1½ miles east of No. 7 and 4½ miles from the town of Cumberland. Two shafts, the main shaft measuring 11x22 ft., and air shaft, 11x18 ft., have been sunk to a depth of about 1000 ft. and the mine is being opened rapidly, some coal now being produced. A steel tipple, equipped with Marcus screen, has been erected, and 75 miners' houses have been built. The company's sawmill was destroyed by fire, but this is to be replaced shortly.

*P. O. Box 645, Victoria, British Columbia.

At the company's Extension colliery the production of coal is now only about one-seventh that of Comox—300 tons a day as compared with about 2100 tons—but when the new electric locomotives are received, in place of those destroyed by the strikers when they set fire to the surface buildings, a much larger output will be secured.

WESTERN FUEL CO.

Before the strike 1300 to 1400 men were employed at the Western Fuel Co.'s No. 1 Shaft, Protection Island, and No. 4 Northfield mines, but at the close of the year only about one-fourth that number were at work.

At the company's Reserve mine the two shafts, each 10 ft. by 25 ft. 9 in. within timbers, reached the coal at a little more than 1000 ft. Hoisting engines were installed, made by Andrew Barclay & Sons, Kilmarnock, Scotland; the main engine is 30x60 in., with Corliss valves and has two 14-ft. drums, the other is 26x54 in., also with Corliss valves, the drums being 12 ft. in diameter. Both are equipped with special devices to prevent overwinding. Transportation is provided by a standard-gage railway to the company's shipping docks and loading bunkers near No. 1 shaft, Nanaimo.

PACIFIC COAST COAL MINES

Not much change was made at the Pacific Coast Coal Mines' South Wellington mine. A larger compressor was put in, and more houses for miners were built. The output of coal is being gradually increased and it is expected that it will shortly be as large as before the strike.

At Morden, two miles east of South Wellington, the company sunk two shafts, a main shaft 9x16 ft., and an air shaft 9x12 ft. in the clear, and reached the coal at about 600 ft. early in the year, but development of the mine was prevented by the strike of the men, and the shaft was flooded. The high-pressure side of a Canadian Ingersoll-Rand compressor has been put in, also high-pressure steam boilers, altogether 450 hp., and a pair of 24x48-in. high-duty winding engines. The construction of a reinforced steel tipple and coal-washing plant has been commenced, and the installation of a fan, two direct-connected electric units each 150 kw., and the necessary work about the yard are in hand. It is expected this equipment will be completed by Mar. 1. Present development of the Morden mine shows a seam of coal 8 ft. in thickness.

The standard-gage railway track from South Wellington to the shipping docks at Boat harbor, 7 miles, has been relaid with heavier steel.

At the company's Suquash mine, in the northern part of the Island, mine development, construction work, and equipment have been in progress while the miners have been on strike. A new shaft, 11x22 ft. in the clear is being sunk and a pair of slopes being driven to connect older workings with the new. The coal is regular, averaging about 6 ft. in thickness. There are two 150-hp. steam boilers and a pair of 24x48-in. winding engines. A number of new buildings have been erected.

The Vancouver-Nanaimo Coal Mining Co., having conceded the demands of the United Mine Workers of America, worked full-handed the greater part of the latter half of the year. Its production of coal was larger than in 1912, but there is little else of interest to note.

NICOLA AND SIMILKAMEEN

The Nicola Valley Coal & Coke Co. mined less coal in 1913 than in 1912—123,000 tons (110,000 long tons) as against nearly 160,000 tons (143,000 long tons). On the other hand, the Inland Coal & Coke Co.'s production figures are 130,000 tons (116,000 long tons) in 1912 as compared with 35,100 tons (31,300 long tons) in 1912. Diamond Vale Collieries continued of small importance as a producer. The Pacific Coast Colliery Co. is reported to have reached good coal.

In Similkameen district, the Princeton Coal & Land Co. made about the same tonnage as in 1912. The Columbia Coal & Coke Co. called a halt and sold its property, and the new owners are doing development work in another part of this field. The United Empire continued unimportant.

The only company from which information was received is the Nicola Valley Coal & Coke Co.; a summary follows:

Production for the year is estimated at 125,086 tons (111,684 long tons), this being a somewhat higher total than is used in the accompanying table, but allowance is made for a reduction in output in December. The decrease as compared with 1912 is accounted for by unfavorable mining conditions in the first half of the year. These have been overcome. Mines Nos. 7 and 8 were opened; in No. 7 the main slope is being pushed ahead, with working places being opened as progress is made. This is in a 16-ft. seam of excellent coal. No. 8 is promising, with 6 ft. 6 in. of coal, but development is yet too limited for any certainty. Present working conditions allow of an output from this colliery of 750 tons a

day, with a gradually increasing capacity, but high railway freight rates so limit the market that output is kept down accordingly. The railway company itself, formerly a good customer, is now burning oil in many of its locomotives instead of coal.

The Inland Coal & Coke Co. has opened a new slope, No. 5, and is active both in developing its property and finding a market for its coal.

SOUTHEAST KOOTENAY COLLIERIES

Generally, the position at Crowsnest district mines shows improvement. Both the Crow's Nest Pass Coal Co. and the Hosmer Mines, Ltd., made a larger production in 1913 than in 1912. The Corbin Co. had to close its No. 1 mine, owing to a fire, from spontaneous combustion; as a consequence this mine was unproductive during the greater part of the year.

At Coal Creek colliery of the Crow's Nest Pass Coal Co., B seam, lying 320 ft. above No. 1 in the Coal Creek measures, was developed to a producing capacity of 500 tons a day. At Michel colliery, two new mines were developed on the north side of the valley, and a skip incline was put in to convey the coal from mines to tipple level. The skips or cages carry eight tons of coal down a grade commencing at 30 per cent. and being 60 per cent. at the lower end. The incline is 1280 ft. in length, and the skips easily controlled by rotary multiple brakes, travel that distance in 80 seconds. These new openings are expected to yield a profitable production throughout the ensuing year. Prospecting on the south side of the valley at Michel resulted in a new seam being found about 150 ft. above No. 3 seam; it shows a working section about 10 ft. thick and the coal is generally of good quality.

The output of coal from Coal Creek mines compares favorably with that of the last good year, while the quantity of coke made at the ovens at Fernie is estimated to exceed the previous highest record by nearly 10,900 tons or 9700 long tons.

There was no new development work undertaken at Hosmer colliery, of the Hosmer Mines, Ltd., during the year. The B incline was double-tracked and another drum added to the engine operating it. An 8-ft. diameter Sheldon Keith wheel fan was provided for ventilating No. 2 B south mine. A steam locomotive was obtained for the rock bank and for hauling boiler coal. The production showed a substantial increase 266,000 tons (237,500 long tons) in 1913 against 210,832 tons (188,243 long tons) in 1912. The coke output was 120,000 tons (107,143 long tons) as compared with 50,824 tons (45,379 long tons) in 1912.

No. 4 mine of the Corbin Coal & Coke Co., known as the "Big Showing," was provided with transportation facilities. This mine is situated nearly 1000 ft. above No. 1, the latter being near the valley level. In No. 1 mine the coal seam is nearly vertical and varies greatly in thickness. W. W. Leach, of the Geological Survey, described it as varying from a minimum thickness of 10 ft. to a maximum of nearly 250 ft. This great difference may be due to compressed monoclonal folding. At the upper mine the coal has been stripped near the top of the hill and it is shown in a synclinal basin about 370 ft. in width, the thickness of the coal near the center having been proved by drilling to be more than 100 ft. During the summer and autumn, coal in No. 3 mine was worked in opencuts by a steam shovel, and sent down the switchback standard-gage railway for shipment. The snowfall being heavy, opencut working is not practicable in winter, but about 150 tons of coal a day is being mined here underground.

No. 4 mine is a new opening made after a fire in No. 1 necessitated the closing of the latter. The seam in No. 4 is a branch off that in No. 1. Present production is at the rate of about 250 tons of coal a day. A Marcus screen has been purchased, but it will not be put in until next spring.

GENERAL NOTES

Little progress was made toward the extensive development of the newer coal fields in the province, these being without railway transportation. Some development work was done, both in the Groundhog Basin in northern Skeena, and in other fields in the southern part of that district.

The removal of the tariff on coal entering the United States has not yet made much difference in the quantity exported from British Columbia. No doubt later it will favorably affect both the Crows Nest district and Vancouver Island mines, but this year the latter have not been able to supply the British Columbia market, the strike of miners having kept down production. In fact,

much coal has been imported from the state of Washington and elsewhere to supply demands from the coast cities of British Columbia.

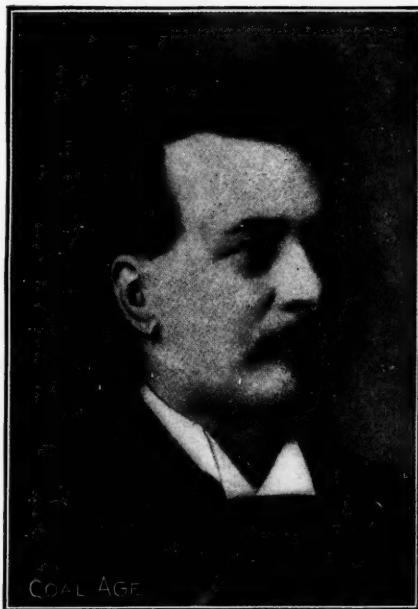
Saskatchewan

BY FRANK B. SMITH*

Coal has been mined in the province of Saskatchewan for the past quarter of a century but not till within the last decade has any large operating company entered the industry.

Up to the year 1905 all the published records of coal production in the province were included in the statistics of the public works of the Northwest Territories, which included the new provinces of Alberta and Saskatchewan.

In that year the territory was divided and the records of each province kept separately. The returns made to the government in 1905 showed only 60,000 tons mined, but there is no doubt but that more coal was produced. There were a number of small mines in outlying districts producing a few hundred tons each per year. These failed to send in returns. Since then, however, a better account



F. B. SMITH, SASKATCHEWAN, CANADA

has been kept of all the mines in operation in the province, the records showing a marked increase of production. The estimated output of coal for the year 1913 will be approximately 350,000 tons.

SMALL MINES CLOSE DOWN OWING TO INADEQUATE EQUIPMENT

Since the beginning of the mining industry in the province there have been over 50 mines opened, the greater number of them being on such a small scale that as soon as the haulage became an important item, the mines were abandoned. At the present time there are 30 mines in operation, and, of the yearly output, four of these are producing 85 per cent. of the total.

These are: Western Dominion Collieries, Ltd., Taylorton; Manitoba and Saskatchewan Coal Co., Ltd., Bien-

*Inspector of mines, Saskatchewan, Canada.

fait; R. Hawkinson Coal Co., Bienfait; Maple Leaf Coal Mining Co., Shand. Within the past two years there has been much activity in the sale and transfer of coal lands especially to companies which are already manufacturing brick or intend to make it. The clay which overlies the coal is of the finest quality for the manufacture of common and pressed brick and it is shipped all over this province and into Manitoba and Alberta.

LABOR CONDITIONS

Accidents at the mines are infrequent, even although the men employed are not the best of miners, the majority being homesteaders who find in the mines employment for the winter months.

A few years ago there was an effort made to organize labor but the conditions not being at all favorable the idea was eventually abandoned. There are a few local disputes between the operating companies and their employees, but these are all amicably settled.

COAL RESOURCES OF SASKATCHEWAN

In the "Coal Resources of the World," Saskatchewan is credited with having a coal area of 7500 square miles. The estimated quantity of coal in this area is given as 20,000,000,000 tons.

The coal is a lignite with a high percentage of moisture, which, owing to the variable temperature, is difficult to transport without a loss in weight and condition. The average analysis of this coal is: Moisture, 28.84; volatile combustible matter, 32.15; fixed carbon, 34.61; ash, 4.40; total, 100 per cent.

The lignite coal of the province of Saskatchewan is similar to and of the same geological age with the lignite coal of North Dakota. That state through the mining engineering department of its university has during the past few years been making extensive experiments relative to the use of lignite for the production of gas and briquettes and these investigations have been successful from a commercial standpoint.

With the same idea in view, Saskatchewan has lately established a carbonizing plant at Estevan from which good results may be heard in the early part of next year.

Nova Scotia

SPECIAL CORRESPONDENCE

SYNOPSIS—Every condition being favorable, the production of Nova Scotia increased 6½ per cent. during 1913. The fatality rate was about 3.6 per 1000 men.

■

The production of coal in this province in the year 1913 was about 8,400,000 tons (7,500,000 long tons), the largest for any year in the history of our coal industry. This exceeds the previous year's output by half a million tons, and was produced from 39 mines, 27 of which are in Cape Breton Island.

The conditions at the mines were generally good. There were no strikes; the demand for coal was strong; the season was favorable for shipments, and barring a scarcity of labor for a short time during the summer, there were favorable conditions to warrant our largest year's production. The larger coal companies are arranging to secure more men for this year's operations.

There will be a larger tonnage dumped this winter, if

conditions are as favorable as they were last year, and with the continued strong demand for coal, 1914 promises to be another record breaker.

OLD MINES ARE BEING REOPENED

The physical condition of the collieries is good. Six mines have been reopened during the past season. The Cape Breton Coal, Iron & Ry. Co. has reopened the Broughton mine, and a small shipment has been made at Louisburg, over the Sydney & Louisburg Ry., the coal company not yet having a shipping wharf. There should be a considerable output from this mine this year.

The Dominion Coal Co. has reopened the old Victoria mine, in the Sydney coal field, which mine, up to 20 years ago, was a good producer. The Emery mine, of the Dominion Coal Co., at Glace Bay, has been placed again in

the producing list. The Nova Scotia Steel & Coal Co. will have another mine in operation this year, which makes six for this enterprising corporation.

The Scott pit of the Intercolonial Coal Co., Pictou County, was reopened last year, and the Minudie Coal Co. has added another mine to its operations in Cumberland County.

There is much undeveloped coal land awaiting demand. The area under lease is about 1200 square miles.

There were employed last year, exclusive of railway, stevedore, and clerical staffs, 13,664 men. There were 147 accidents, 49 fatal and 98 nonfatal.

The coke production was 815,401 tons, or 738,037 long tons, exceeding the previous year's production by 139,255 tons, or 124,335 long tons. There were no transfers of important coal properties during the year.

* * *

Present Conditions in the Coal Fields of Mexico

SPECIAL CORRESPONDENCE

SYNOPSIS—Practically all the coal plants owned by Mexican capitalists were destroyed. Properties of American and English investors were not molested. If peace should be restored, the plants still standing will not be able to supply the demand of the country.

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The troubles in the Coahuila field of Mexico began early in the year 1913 with a strike of the trainmen on the National Lines, which tied up completely all operations through entire lack of train service, and lasted for 15 days. This was followed early in February by the revolution against the Huerta government by Governor Carranza of the State of Coahuila, who declined to honor the authority of Huerta as President after the death of Madero.

The Revolutionists were able to take control of the part of the National Lines running from Eagle Pass, Texas, south to Reata, Mexico, where it connected with the other branch of the National Lines running between Monterey and Laredo. There being no local market between Reata and the border and the Revolutionists not being able to operate this road in connection with the rest of the National Lines which were under the control of the Federal Government, all railroad communication ceased and the mines were not able to ship any coal.

Hoping that this condition would only be temporary and in order to keep their forces together they continued mining coal and making coke until they had stored all that they were able to handle around their mines and coke ovens. It became necessary to suspend operations in April and since that time there has been no coal mined or coke produced in the entire region.

AMERICAN MINE NOT DESTROYED

No attempt was made by the Federal forces under President Huerta to recover this railroad until September when an army was sent north along the line of this road, defeating the Revolutionists at Monclova and again at Hermanas. The Revolutionists as they retreated north destroyed the railroad bridges and the coal mines owned

and controlled by Mexican capitalists. None of the American or English owned mines in that field were molested.

The first mine property that the Revolutionists came to on their retreat north was that of the Lampacitos Coal Company owned by the same group of Mexican capitalists that controlled the Agujita Coal Company and the Rio Escondido Coal Company near the border. At Lampacitos there were three mines in operation with a battery of 50 Koppers retort coke ovens and washing plant, electric pumps, and several hundred miners' houses and other buildings, including the residence for the assistant manager. Everything was either burned or blown to pieces by dynamite. The electric pumps in the mines are all under water and the estimated loss to this property is over \$500,000.

Going north from Lampacitos they reached the junction point of Barroteran where the line to Musquiz leaves the main line and passed by the American owned mines at Las Esperanzas and completely destroyed the mines at Menor, owned by the Northern Coal Company, a subsidiary of the Monterey Steel Company. Here the destruction was complete and there is nothing left of the tipple, machine shop, store and other buildings that were erected on the property, and the mines are filling up with water. As these workings were already quite extensive, it is a question whether they can ever be profitably reopened. This branch line of railroad was also completely destroyed although it is owned by the Mexican Coal and Coke Company, who originally built it and leased it to the National Lines of Mexico for a term of years.

BRIDGES ALSO DESTROYED

Going north from Barroteran on the main line they destroyed the large steel bridge across the Sabinas River, not only blowing up the piers with dynamite but setting fire to a train of coal cars that were on the bridge, so that the heat from this fire has warped the steel girders and made this \$500,000 bridge a complete loss.

Turning northwest from Sabinas on the Rosita Branch

of the National Lines they reached the Agujita plant, which had the largest output of coke in Mexico, and announced that they intended to totally destroy this plant. Arriving, however, late in the afternoon they burned before dark a coal washery, the tipple at the No. 1 mine, machine shop, and a 2000-ton coal storage bin, and set fire to 52 other buildings, including the general office, manager's residence, hospital and school building, and at dark left telling the superintendent they would return in the morning and complete their work, but during the night word reached them that the Federal soldiers were catching up and they went on north without coming back the next day. The result was that the company has all its miners houses, tipples at two of its mines, with 400 beehive ovens in good condition, and all that they will need to start operation will be a new washery and an office building. Estimated loss at this plant is about \$200,000 on surface improvements and, of course, there will be a heavy loss underground from the mines not being kept open.

To show the distinction made by the Revolutionists between the Americans and Mexicans; the superintendent and master mechanic of the Agujita Coal Company were Americans and the houses in which they lived were surrounded by the houses that were set on fire; the officer in

In the northern field just across the river from Eagle Pass, the Rio Escondido and Phoenix Coal Companies, although both owned and controlled by Mexicans, were not in any way disturbed by the Revolutionists.

The total damage to the mine property throughout this coal field will run into several millions of dollars. The camps are practically deserted with the exception of a few officials and enough men to man the pumps and boilers. Some of the mines are, however, being allowed to fill up with water as it proved too expensive to maintain the pumping.

The coal mines in Coahuila produced during the year 1912 over a million metric tons of coal and 250,000 metric tons of coke. In 1913 only 5000 tons of coal was shipped and very few cars of coke were able to reach the consumers before the railroad fell into the hands of the Revolutionists. There are now stocked at the various mines about 100,000 tons of coal and 75,000 to 80,000 tons of coke, but nothing can be done toward moving this until the railroad situation is cleared up and peace once more comes to that country.

MINERS BECOME REVOLUTIONISTS

The whole transportation system of Mexico, upon which these coal mines depend, has been torn to pieces.



AFTER DESTROYING ALL OF THE MEXICAN COAL PLANTS, THE REBELS DYNAMITED BRIDGES AND SET COAL TRAINS AFIRE. THIS SHOWS THE SABINA RIVER BRIDGE

charge of the Revolutionists detailed a squad of his men to climb on the roof of the two Americans' houses with water and to see that these two houses were not burned by the fire set to the adjoining ones.

A MADERO PLANT WAS NOT MOLESTED

At the same time this destruction was going on at Agujita another squad moved on up the Rosita Branch, passing by the English owned mines at Cloete to the mines of the Rosita Coal Company and set fire to two of the tipples there. While these tipples were burning one of the office employees convinced the officer in control that the owners of this property were in sympathy with the Revolutionists, as the property was owned by the Madero family and Ernesto Madero, an uncle of the former President, was the president of this company. The officer thereupon called off his men although the coal washery and storage bin had been saturated with oil ready to set on fire. The Rosita Coal Company, therefore, got off with a loss of a little less than \$50,000. There is a very valuable plant here of retort coke ovens and a first-class washery capable of handling over 1000 tons a day that would have been a heavy loss if they had been destroyed.

All the bridges, track, locomotives and cars in the coal field have been destroyed during this revolution. Even with the restoration of peace and the rebuilding of railroads, it will be many years before the working forces can be brought back into the mining region to equip the mines to produce the tonnage that was formerly obtained from them. Large numbers of these miners have left the country to obtain work in the United States and a great many have been killed in the various battles between the Federal soldiers and the Revolutionists, and such a large number have become professional Revolutionists, an occupation which they find quite congenial and much easier work than digging coal, that it will be many years before the mines of Northern Mexico can produce the coal and coke which they were able to extract and market in that republic during the years preceding this revolution.

With the restoration of peace and the reopening of the smelters there will be a heavy demand for both coal and coke, which should render the operation of the mines that have not been destroyed extremely profitable, as the demand will exceed the supply and prices can be obtained that were not possible when all the mines were in full operation.

Coal Markets and Business Aspects of the Fuel Industry in 1913

BY A. T. SHURICK

SYNOPSIS—Although a period of continued uncertainties in business, the coal markets developed an unexpected buoyancy and producers controlled the situation most of the year. Substantial increase in production. New legislation affecting the coal industry. Labor supply generally inadequate, though plentiful at the close of the year. The ineffective efforts of Connellsville coke operators to obtain higher prices. Some new problems in the marketing of anthracite.

33

The national coal market in 1913 was characterized by the highest average price level in the history of the trade. The year will be recorded as one of satisfactory business and substantial profits; it has been a period of rejuvenation, rehabilitation, restored confidence and general optimism.

Even though the close of the year witnessed a discouraging recession in the coal markets, 1913 cannot be regarded other than satisfactory. It was a season of great momentum, replete with readjustments that give tangible evidence of substantial progress to come.

Particular significance attaches to these facts in view of the generally adverse condition prevailing in financial circles, and the restrictive, not to say radical, State and Federal legislation enacted during the year. The situation in the world's money markets has seldom been worse. Standard securities of the most reputable description depreciated to a point scarcely exceeded by the spectacular panic of 1907, while a number of powerful corporations were forced into receiverships, including representative coal operations of national prominence.

In legislative circles a determined renewal of the dissolution proceedings against the Reading Company, the unexpected announcement of the Pennsylvania State Tax on anthracite and the deliberations of the Ohio Legislature regarding the screening law have all been restraining influences adverse to a more general expansion. In national affairs the abrupt passage of the new tariff and the long threatened new currency bill, finally enacted at the close of the year, had a depressing effect on general industrial conditions that must inevitably have been reflected back to the coal industry.

In the face of these grave uncertainties in commercial circles, it is, therefore, particularly gratifying to record such a substantial improvement in the fuel industry. The question arises: How has this been brought about? The self-complacence sales organizations of the large corporations are prone to ascribe it to good salesmanship, a general determination to obtain higher prices throughout the trade and a tendency to curtail production when such figures are not prevailing. The heavy increase in the output for the year does not justify the belief that there has been any important restriction in operations, while the spectacular break in the pool of the Connellsville coke operators seems to prove the fallacy of any concerted action in holding for higher prices.

But whatever the cause, the beneficial effects must not

be gauged by a standard of dollars and cents. Of far greater importance is the psychological effect upon the consumer who has been brought face to face with the fact that he must be prepared to meet a constantly increasing advance in the cost of fuel. Higher mining costs, as the depths become greater, the increasing cost of labor, a gradual depletion of our coal reserves, and the necessity for a greater expenditure in mining in order to obtain a higher percentage of recovery will inevitably bring about this condition.

The year was replete with inconsistencies and contradictions. Perhaps the most striking of these was the general softness and uncertainties which marked both the opening and closing periods, mid-winter seasons which are commonly the most active. On the other hand, a relatively high price level was struck early in the spring and rigidly adhered to through the summer months when business is ordinarily at a low ebb. But while the year was one of unexcelled prosperity, it was none the less a period of great anxieties and uncertainties.

PRODUCTION

The production in 1913 reached a total of about 562 million short tons, exceeding the previous high record of last year by more than 30 million tons; of this increase about four and half million is credited to anthracite. But while the general production of the country showed an almost normal increase, it is worthy of note that the output of hard coal has not advanced over the past three years. The tonnage in 1913 only just made up the deficiency of six million tons, caused by the strike in 1912, and failed to reach the record mark of nearly 70 million tons in 1911. The falling off was due to the abnormally mild weather prevailing over the closing months of the year, which are usually the most active of the season.

The shortage of miners in Pennsylvania tended to restrict the production of bituminous coal there, but the acute labor troubles in West Virginia materially broadened the market for the Pennsylvania product, and the output was heavy. Ohio produced 38 million tons, showing an increase of 10 per cent. Virginia, West Virginia and Maryland all made substantial increases in spite of the labor difficulties and unprecedented floods in the Ohio Valley which interfered with West Virginia shipments to the Lakes. Dumpings at the Hampton Roads piers exceeded a million tons several months during the year. The output in the Southern States was not, as a rule, so good, although Alabama scored an increase of a full million tons.

Illinois had a substantially larger production, but without any material improvement in the unsatisfactory market conditions there, while Indiana, although passing her 1912 production still failed to reach the record of 1910 when a long suspension occurred in neighboring states. The Southwestern States show a satisfactory increase with the exception of Missouri where a slight falling off is noted. The acute strike in the Colorado fields reduced

the output while all the other Rocky Mountain States either held their own or showed fair increases.

TRANSPORTATION STATISTICS

Thirteen Leading Coal Roads—A study of the statistics of the performance of the 13 leading bituminous coal roads presents some interesting comparisons. For the first 10 months of the year these lines (which handle about 35 per cent. of the country's production) reported a movement of 145 million tons as compared with 132 million for the same period last year. With the exception

COAL MOVEMENT

The following is a summary of the movement of coal and coke over 13 principal railroads during October and the first ten months of 1913 in comparison with 1912, in short tons:

| Anthracite | October | | Ten Months | |
|--|-------------|------------|-------------|-------------|
| | 1912 | 1913 | 1912 | 1913 |
| Baltimore & Ohio ¹ | 184,252 | 166,214 | 1,267,222 | 1,226,938 |
| Chesapeake & Ohio ¹ | 1,440 | 1,645 | 20,711 | 14,639 |
| Erie ² | 761,360 | 794,528 | 6,202,725 | 7,283,826 |
| Pennsylvania ³ | 970,880 | 1,046,703 | 8,358,717 | 8,711,723 |
| Virginia ² | 77 | 50 | 97 | 909 |
| Total 5 roads..... | 1,918,009 | 2,009,140 | 15,849,472 | 17,238,035 |
| Bituminous | | | | |
| Baltimore & Ohio ¹ | 3,038,407 | 3,401,618 | 28,431,931 | 30,652,147 |
| Buffalo, Rochester & Pitts. ¹ | 812,418 | 985,223 | 6,827,271 | 8,037,988 |
| Buffalo & Susquehanna ¹ | 157,493 | 168,148 | 1,246,422 | 1,507,341 |
| Chesapeake & Ohio ¹ | 1,382,680 | 1,570,072 | 14,480,895 | 14,188,105 |
| Erie ² | 14,603 | 13,298 | 220,070 | 319,764 |
| Hunt. & Br'd T. Mt. ¹ | 129,111 | 127,898 | 1,011,737 | 1,135,294 |
| New York Central..... | 814,144 | 889,153 | 6,667,903 | 7,658,720 |
| Norfolk & Western ¹ | 1,939,772 | 2,098,241 | 19,048,864 | 20,037,498 |
| Pennsylvania ¹ | 4,113,550 | 4,887,840 | 38,227,609 | 42,662,163 |
| Pitts. & Lake Erie ¹ | 1,158,203 | 1,144,112 | 9,527,976 | 10,812,407 |
| Pitts. Shaw & North ¹ | 218,387 | 270,174 | 1,619,271 | 2,307,343 |
| Virginia ² | 338,518 | 476,482 | 2,950,100 | 3,768,423 |
| Western Maryland..... | 207,829 | 248,558 | 2,322,620 | 2,459,414 |
| Total 13 roads..... | 14,305,121 | 16,281,117 | 132,582,669 | 145,546,607 |
| Coke | | | | |
| Baltimore & Ohio ¹ | 433,547 | 388,337 | 3,932,524 | 3,667,855 |
| Buffalo, Rochester & Pitts. ¹ | 57,673 | 32,059 | 442,220 | 445,162 |
| Buffalo & Susquehanna ¹ | 29,184 | 30,965 | 227,664 | 255,503 |
| Chesapeake & Ohio ¹ | 25,060 | 33,035 | 213,087 | 299,921 |
| New York Central..... | 7,812 | ..... | 72,937 | 36,207 |
| Norfolk & Western ¹ | 131,007 | 111,020 | 1,197,943 | 1,287,622 |
| Pennsylvania ¹ | 1,211,620 | 1,152,950 | 10,882,963 | 12,012,363 |
| Pitts. & Lake Erie ¹ | 587,638 | 567,661 | 5,171,735 | 5,750,552 |
| Pitts. Shaw & North ¹ | 5,986 | ..... | 5,155 | 9,383 |
| Western Maryland..... | ..... | 4,892 | 57,624 | 64,115 |
| Total 10 roads..... | 2,489,527 | 2,320,919 | 22,203,852 | 23,828,683 |
| Coal and Coke, 13 Roads | | | | |
| January..... | 16,421,839 | 18,936,646 | ..... | ..... |
| February..... | 17,787,331 | 17,546,496 | ..... | ..... |
| March..... | 19,483,025 | 17,631,345 | ..... | ..... |
| April..... | 13,429,367 | 16,850,690 | ..... | ..... |
| May..... | 15,635,568 | 18,986,796 | ..... | ..... |
| June..... | 16,702,153 | 18,580,363 | ..... | ..... |
| July..... | 16,635,448 | 18,704,710 | ..... | ..... |
| August..... | 18,396,247 | 19,718,856 | ..... | ..... |
| September..... | 17,432,358 | 19,046,247 | ..... | ..... |
| October..... | 18,712,657 | 20,611,176 | ..... | ..... |
| November..... | 17,815,767 | ..... | ..... | ..... |
| December..... | 17,929,632 | ..... | ..... | ..... |
| Total, 12 months..... | 206,381,392 | ..... | ..... | ..... |

¹ Includes coal from connecting lines.

² Includes company's coal.

³ Does not include company's coal hauled free.

Note.—The Southern Railway hauled 351,220 short tons of coal during September, 1913, and 3,127,282 short tons during the nine months ending September 30, 1913.

of February and March the roads show a consistent increase in shipments for each month of the year as compared with 1912.

Anthracite Coal Roads—The shipments over the eight leading hard-coal roads for the year of 1913 totaled slightly over 69 million tons as compared with 63½ million in 1912. Because of the curtailment in mining in 1912, due to a suspension of six weeks pending the fixing of a new wage scale, production that year was six million tons behind 1911, so that the 1913 shipments do not show any substantial gain.

Pennsylvania Railroad—Total shipments of coke, anthracite and bituminous coal over this road for the first 11 months of 1913 amounted to nearly 70 million tons as compared with 63½ million for the same period in

COAL AGE

PENNSYLVANIA RAILROAD

The following is a statement of shipments over the P.R.R. Co.'s lines east of Pittsburgh and Erie for November and first eleven months of 1912 and 1913 in short tons:

| | November | | Eleven Months | |
|-----------------|-----------|-----------|---------------|------------|
| | 1913 | 1912 | 1913 | 1912 |
| Anthracite..... | 987,487 | 916,914 | 9,699,210 | 9,275,631 |
| Bituminous..... | 4,509,375 | 3,934,876 | 47,171,538 | 42,162,485 |
| Coke..... | 999,500 | 1,245,500 | 13,011,863 | 12,128,433 |
| Total..... | 6,496,362 | 6,007,290 | 69,882,311 | 63,566,579 |

1912. The movement shows a consistent increase throughout the year with the exception of February and March, during which time the tonnage fell off materially.

Baltimore & Ohio Railroad—For the first 11 months of 1913, the B. & O. handled 1.2 million tons of coal and coke as compared with 33½ million in 1912. A

BALTIMORE & OHIO

The following is a comparative statement of the coal and coke movement over this road for November and the first eleven months of 1912 and 1913:

| | November | | Eleven Months | |
|------------|-----------|-----------|---------------|------------|
| | 1913 | 1912 | 1913 | 1912 |
| Coal..... | 2,939,975 | 2,864,734 | 32,091,742 | 29,140,169 |
| Coke..... | 343,387 | 435,001 | 4,350,800 | 4,318,122 |
| Total..... | 3,283,362 | 3,299,735 | 36,442,542 | 33,458,291 |

steady increase in the shipments is noted for each month with the exception of February and March, the increases being particularly noticeable during the mid-summer period.

Atlantic Coastwise Freights—Water rates on the Atlantic coast, Hampton Roads to Boston, were about 75c. per ton, or 5c. above the average for 1912. As high as 95c. to \$1 was paid in January and February. The Reading rate, Philadelphia to Boston, was decreased 10c. per ton Mar. 15, but again restored Nov. 1. As a rule, tonnage was comparatively easy during much of the year. The most notable feature in coastwise shipping is the steadily increasing proportion of steam vessels going into this service each year.

Lake Shipping—The total receipts of bituminous coal at Milwaukee, Wis., amounted to a little over four million tons as compared with three and a half million in 1912. The combined bituminous and anthracite tonnage was four and a half million in 1912 as compared with over five million in 1913. Shipments of anthracite from Buffalo, which handles four-fifths of the Lake movement, amounted to over five million tons in 1913, as compared with less than four million in both 1912 and 1911.

SAULT CANAL SHIPMENTS

The movement through the Sault Canals for 1913 was as follows:

| Month | U. S. Canal | Canadian | Total | |
|----------------|-------------|----------|---------|---------|
| | | | 1912 | 1913 |
| April..... | 214,814 | ..... | 214,814 | ..... |
| May..... | 294,912 | 116,433 | 411,345 | 17,848 |
| June..... | 288,036 | 89,833 | 377,869 | 207,060 |
| July..... | 334,516 | 87,010 | 421,526 | 280,317 |
| August..... | 308,497 | 75,350 | 383,847 | 228,083 |
| September..... | 249,783 | 51,750 | 301,533 | 394,526 |
| October..... | 237,723 | 54,967 | 292,690 | 360,903 |
| November..... | 239,691 | 52,077 | 291,768 | 382,530 |
| December..... | 32,982 | 16,200 | 49,182 | 77,600 |

| | Bituminous | | | |
|----------------|------------|-----------|------------|------------|
| | 1912 | 1913 | 1912 | 1913 |
| April..... | 378,490 | 135,894 | 514,384 | 46,779 |
| May..... | 1,878,482 | 497,921 | 2,376,403 | 1,606,243 |
| June..... | 2,043,001 | 558,301 | 2,601,302 | 2,062,375 |
| July..... | 1,971,380 | 523,410 | 2,494,790 | 2,265,837 |
| August..... | 2,044,782 | 521,538 | 2,566,320 | 2,081,865 |
| September..... | 1,463,861 | 503,495 | 2,057,356 | 1,392,911 |
| October..... | 1,309,245 | 388,576 | 1,697,821 | 1,392,914 |
| November..... | 1,007,432 | 338,021 | 1,345,473 | 1,466,583 |
| December..... | 174,560 | 49,955 | 224,515 | 385,506 |
| Total..... | 14,742,207 | 4,150,731 | 18,622,938 | 14,931,594 |

The movement through the Sault Canals in 1913 totaled 18½ million tons as compared with 15 million

in 1912. Lake shipping was much restricted by the disastrous storm at the close of the season. Receipts at the Twin Points, at the head of the Lakes, were 11 million tons as compared with 8½ million in 1912. While arrivals have been heavy it is noted that the movement out was light and as a consequence there is a large supply on hand.

HOLDING THE HIGH-PRICE LEVEL

As already noted, the salient feature of the 1913 coal market was the abnormally high average price level. The year opened relatively strong, but the market gradually declined through January, occasionally touching a point below the 1912 season's prices. Spot quotations were hammered severely by consumers, but in the face of these adverse conditions the trade showed a disposition to hold together on prices, and the market developed unexpected recuperative powers. Production was restricted through February and March, as reference to the railroad shipments will show, and as a result accumulations at the distributing centers were reduced and quotations held in an unprecedented manner.

When the contracting time arrived, Apr. 1, it was found that business was being closed at prices ranging from 10 to 25c. above last year's figures. While many of the large conservative buyers did not feel that conditions warranted such an abnormal advance, the possibility of serious labor troubles in West Virginia strengthened the position of the sellers, and the new prices were well maintained. The outlook was indeterminate for some time, but consumers were not disposed to take any changes and much business was closed, although usually with a guarantee protecting the purchaser against a serious decline. The buying interests gradually became the aggressor, and producers showed an inclination to be cautious about heavy commitments for the distant future.

The opening up of the Lake season, with indications of a heavy demand from the Northwest, had a further tightening effect upon the situation. The potential strength of the trade was conceded by all. In June, buyers, not yet covered, realized they had overstayed the market, and as a result there was a gradually increasing rush for coal which put the new prices on a firm basis with operators thoroughly in control. The further development of the labor difficulties in West Virginia tended to aggravate the situation, and many producers obtained prices that they had entertained little hope of ever receiving again.

It is interesting to review the conditions leading up to this abnormally high-price level. Large consumers have, in the past, had little difficulty in buying their entire requirements at almost any period of the year. As a result they have shown little inclination to bind themselves by contracts and even where such business has been done, the obligations were not usually regarded seriously.

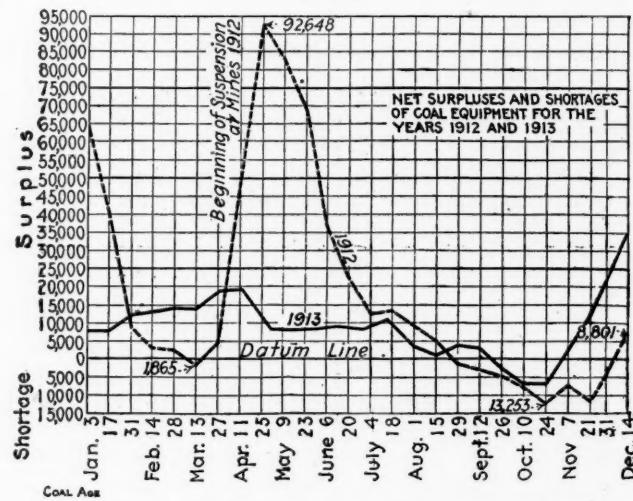
During the winter of 1912 and 1913, however, an inflated condition developed and buyers in the spot market were forced to meet an excessively high-price level. The physiological effect of this experience was obvious, and when the contracting season arrived, there was a general rush to close. Those who failed to cover at this time found it difficult to do so later. Operators, on the other hand, were reluctant to sign contracts, anticipating another profitable season for spot coal. The Ohio Valley floods, involving a shortage of some ten million tons, and

heavy requirements from the West, particularly in the Lake trade, also had some bearing on the situation.

NEW CHANNELS OF TRADE

One of the most important changes in established channels of business was the large increase in the Pennsylvania grades in the New England market. The remarkable stability of these coals there occasioned great surprise in trade circles. This was due essentially to a broadening of the market for the Pocahontas, New River and Georges Creek fuels which are increasing rapidly in popularity, and are being more closely held for export and government use. There are numerous instances where the Pennsylvania varieties succeeded to the West Virginias, and they were even used, in some instances, in the export business.

With the possible exception of the extreme Northwest, it is not probable that the reduced tariff on coal will ef-



fect any important changes in the North American markets. The only foreign competition to be anticipated in the East is from Cape Breton coals in the coastwise trade. Since these are of rather inferior quality, as compared with the better grade domestic product, and as they also carry a high freight burden, it is improbable that they will be able to enter aggressively into the local situation.

The adverse conditions in the Middle Western markets were further complicated during the year. Many mines found themselves in financial difficulties while the big flood the early part of the period had a disastrous effect. The market for the Illinois product seems to be narrowing in all directions, due to competition with the non union fields. There was also a gradual shrinkage in the tonnage of screenings over the close of the year as the effects of the water power developed by the new Keokuk dam became evident.

In general there has been a notably increased discrimination on the part of buyers during the year. Consumers have, in the past, been consistently governed by prices, but they are now awakening to a realization of the fact that a discrepancy of 5 or 10c. per ton in the mine price is scarcely perceptible in the cost at destination, whereas an important economy may often be effected.

ANTHRACITE

The year opened with a shortage of some six million tons in the production of anthracite, due to the suspension in the early part of 1912. But the abnormally mild

temperatures, prevailing through the winter of 1912-1913 enabled the operators to pull through the season without any difficulty.

The most notable feature in the hard-coal market during the year was the acute shortage of stove coal. So severe did this become that many of the operating companies put their egg coal back through the breaker in order to make more stove. Egg coal proved the heaviest in the domestic sizes and the problem of moving this grade has developed into quite a serious one. Under exceptional pressure, as noted, this grade has even been put back through the breaker, but, owing to the large proportion of steam size resulting, this cannot be considered as practical.

Western shipments via the Great Lakes materially helped the situation and eliminated what would otherwise have been heavy overshipping. Buffalo handles four-fifths of the anthracite movement by lakes to the Northwest. Shipments for last three years were: 1911, 3,917,429 tons; in 1912, 3,925,583 tons, and in 1913, over five million tons.

As had been anticipated, individual coal failed to figure prominently in the market. In spite of the fact that substantial concessions from the regular circular were freely offered in February and March, most consumers showed a consistent loyalty to the companies who had so adequately provided for their needs when a shortage seemed inevitable in 1912. Many instances of this kind could be pointed out.

The unexpected passage of the Pennsylvania State law providing for a tax on all the anthracite mined, proved a disturbing element in the trade. Because of the uncertainty as to the constitutionality of the procedure, most of the companies refused at first to add this increase to the regular circular. As a result the customary channels of business were disarranged, many consumers withdrawing orders from companies charging the increase, and placing them with those that did not.

Since the matter could not be carried to the courts until the first collections were due, Jan. 1, 1914, it was impossible for many to determine just what stand to take in the matter. Where the tax was added the increase was bitterly denounced by consumers on the ground that they were being compelled to carry a portion of the Pennsylvania taxes. The close of the year found most companies making the addition. The tax amounted to $2\frac{1}{2}$ per cent. on the mine price of coal, which was figured at 10c. per ton on the prepared sizes and 5c. on pea size. No addition was made to the steam grades.

In the Middle Western market hard coal has not been favorably received in recent years due to various causes. A favorable business was anticipated this season until a price war was precipitated in St. Louis which resulted in such reduced prices that dealers were compelled to carry a loss. One favorable result, however, was an increased popularity of the coal, due to the lower figures.

New rules and regulations regarding the movement at tidewater and demurrage charges there were put in effect, some of which were severely condemned by the local dealers. The customary increase in both demand and prices occurred early in the fall, but the unseasonable weather experienced over the closing months caused a heavy slump and anthracite rounded out the year in poor form, with collieries working under a heavily restricted production.

CONNELLSVILLE COKE

The year in coke was marked by severe fluctuations and strenuous fights between buyers and sellers of the Connellsburg product. The opening prices were high, but declined sharply in sympathy with pig iron. In July the market struck a \$2.50 level, and held determinedly until October when it broke violently at first, gradually easing off to a \$1.75 price. It developed later, however, that this quotation was mostly on off-qualities, and the close of the year found better prices prevailing generally.

While pig-iron production for the year showed some increase, the output of Connellsburg coke did not share proportionately, due principally to the incursion of by-product coke into the Connellsburg market. The future of this field will be determined principally by the rapidity with which the iron manufacturers adopt furnaces suitable for using by-product coke. The trend is certainly in this direction, and many think the last of the Connellsburg coal will be shipped to by-product ovens.

LABOR

Although the year was replete with labor troubles of all descriptions, it is gratifying to record a termination of the long drawn-out difficulty in West Virginia. On Apr. 25 the West Virginia miners voted to accept Governor Hatfield's proposition for a settlement, this having already been agreed to by the operators. A new precedent was also established in West Virginia, when President John P. White and 18 other officials of the United Mine Workers were indicted in the Federal Court on a charge of violating the Sherman anti-trust law by controlling prices. That President White and his lieutenants were scheduled for their full quota of trouble during the year was evident when a Federal Grand Jury in Colorado again indicted he and 24 others on a charge of maintaining a monopoly of labor by precipitating a strike there that continued over the close of the year.

The labor supply was an important factor in the market. Complaints were general in all the mining districts at the inadequate supply during the mid-summer period. Few companies had a full complement of men, while the uncertainties prevailing before the settlement of the West Virginia troubles did much to establish prices at the high level, already noted. As the market eased up toward the close of the year, and it became necessary to restrict production, a surplus supply developed and the year closed with more men than the operators could use.

IN LEGISLATIVE CIRCLES

While no spectacularly radical legislation was enacted during the year, it was, nevertheless, a period of pernicious activity among Government officials that was most disconcerting to the operators at times. That the tendency of both State and Federal legislatures is toward paternalism is no longer to be denied; while ultimate Government ownership in the coal industry is not even being considered in the present day, it is none the less apparent that the Government will no longer be denied the privilege of regulating and investigating commercial and industrial affairs that affect the prosperity of the country.

A notable development of the year was the enactment of a measure by the commonwealth of Pennsylvania providing for a state tax of $2\frac{1}{2}$ per cent. of the market value, f.o.b. mines, of all the anthracite produced. The tax

proved a disturbing element in trade circles because of the lack of uniformity in collecting it, some companies refusing to add it to the circular until near the close of the year. It was asserted in some quarters that the tax would prove unconstitutional for the reason that it is not permissible for a local commonwealth to levy assessments on a commodity used in interstate commerce. Since the issue could not be tested until the first collections were due, Jan. 1, 1914, the measure is still in question. Pennsylvania also enacted a law requiring the anthracite companies to maintain hospitals, both above ground and in the mines.

The year in Ohio was marked by some anti-capitalistic legislation. In the early spring, a committee was appointed by the governor to investigate a measure presented by the miners of the state providing for a wage scale arranged on a mine-run, instead of a screen coal basis. Late in the fall the commission reported favorably on the measure with certain restrictions. A workmen's compensation law was also enacted. During the last month of the year, investigations were instituted with a view to effecting a reduction in freight rates from the Hocking district to the Lakes. The present tariff as compared with that from West Virginia is adverse to the local operators and the evident determination of the Ohio executive to protect local industries was received with much optimism.

Not the least important of the year's legislation was the passage of the Sundry Civil bill carrying a "rider" exempting labor from prosecution under the anti-trust laws. This measure was regarded as adverse to capitalistic interests and was returned to Congress for reconsideration by President Taft during his tenure in office. Organized labor has yet to prove that only the unionists shall have the privilege of working and certainly interference with the production of a commodity used in interstate commerce is clearly an infringement upon the basic intent of the Sherman act.

CONDITIONS IN GENERAL BUSINESS

While the coal markets were developing an accumulative strength with the approach of the fall buying season, the outlook in industrial circles became steadily more ominous. As early as May there were evidences of a congested condition in the world's investment market, and standard first-class securities could only be floated at a substantial sacrifice. The origin of the trouble was ascribed to the European war, following which came an abnormally large flotation of state, government, municipal, and corporation securities. Since it is mandatory on many of the foreign banks to subscribe for the issues of their respective governments, a heavy liquidation of American securities was precipitated.

The enactment of more or less radical legislation by the national government at about this time, still further aggravated the situation. Large business interests instituted retrenchment policies, manufacturing was curtailed and general industrial activities much restricted.

Thus in spite of a year of unprecedented prosperity, the unsatisfactory financial conditions prevailing resulted in some of the largest bituminous-coal corporations becoming insolvent. Following the announcement of financial difficulties involving the First-Second National Bank of Pittsburgh, controlled by the Kuhn interests, the United Coal Co. and several affiliated subsidiaries

were placed in receivership in July. The O'Gara Coal Co. was the next to feel the pinch, a receivership being announced for this concern Sept. 15. Internal dissension among stockholders appears to have been the indirect cause of the difficulty, charges of mismanagement and misappropriation of funds being made. The early part of December brought the announcement of the insolvency of the powerful Pittsburgh-Buffalo Co. in Pittsburgh. The difficulty was due to strikes, floods and a shortage of liquid assets.

An important development of the year in business circles was the appearance of foreign capital in the local fields, particularly in West Virginia. As early as last January, D. A. Thomas, one of the leading figures in the British coal industry, and a specialist in export business, appeared in the United States with the avowed intention of investing. He made a rapid survey of the Eastern coal fields, and on a subsequent visit purchased a small West Virginia property, and further extended his inspection into British Columbia. There is no tangible assurance that he will become an active figure in the American coal industry as yet, but indications are highly favorable that such will be the case.

Toward the close of the year there were persistent rumors of a consolidation of the leading operators in the New River district, with a view effecting a sale to British investors. Reports indicate that the consolidation would be at a figure which would net present owners a handsome profit. A six-months' extension of the options was requested at the close of the year, indicating that difficulties were being encountered in the financing.

THE FALL DECLINE

It was inevitable that the combination of adverse conditions which developed in commercial circles must ultimately be reflected back to the coal industry. A feeling bordering on hysteria seemed to prevail among consumers during the closing months of the summer, with the result that they continued to drive operators for heavier shipments until, in September, surplus stocks began to accumulate.

The first definite break occurred in coke, when the pool of Connellsburg operators, who had been holding firmly at the \$2.50 level through July, August and September, lost control of the situation and the market fell off sharply. It was soon plain at this time that stocks were abnormal in all lines, and by the last of October the situation was definitely reversed; it was clear that there would be plenty of supplies for winter and the market became dull with spot prices only fairly well maintained though offering a stubborn resistance to any decline.

The closing down of navigation on the Lakes and the gradual awakening to the fact that the West had been oversupplied, threw heavy surpluses on the Eastern trade, which could not be absorbed. The customary fall car shortage failed to develop, thus permitting a continuation of the heavy movement, while temperatures were abnormally mild during the closing months, and constructive element rapidly disintegrated. The demand fell off, premiums were quickly wiped out, and even cuts were made in the regular circular. The market slowed down steadily throughout the fall and the end of the year found practically no business being negotiated. This failure to round out the year in good form was the greatest disappointment of the season.

Review of the Export Coal Trade in 1913

BY F. R. WADLEIGH*

SYNOPSIS—More attention is being paid to the possibilities of foreign markets. American companies have had agents abroad surveying the ground. A number of fairly good contracts have been closed. American coal in South America.

■

The year 1913 saw the greatest awakening of the United States coal trade to the possibilities of the foreign markets that has yet developed; much systematic and continuous work was done to secure business in the Mediterranean and South American countries. While the actual shipments during the year did not show a great increase, it was not spasmodic and the efforts made will undoubtedly show gratifying results in 1914.

There has never been a better time to enter foreign markets. Freights are more nearly normal and enough local coals have been shipped and used to show that they can compete successfully with the better grade British fuels. The demand for coal in South America and abroad is steadily growing, prices are being maintained or raised, while the United States exporter is learning more about his competitors and the conditions under which he must compete, buying and selling methods, etc.

New River and Pocahontas have hitherto made up almost the entire volume of coal exports, but now gas and coking coals are also finding their way into the foreign markets. It has been found that there are large markets for these fuels, especially in Italy, and trials have proved that our product of this description is quite equal, if not superior to, the British and German coals that have hitherto had a monopoly of this trade.

There seems to be every prospect, then, that the steps taken in 1913 to increase our foreign trade, will lead to an increased tonnage and regular contracts. We now have a surplus of coal over home consumption and must find a market for it if prices are to be maintained and the business remain on its present profitable basis. But we are still facing the problem of variable ocean freight rates and supply of ship tonnages, as well as the return-cargo difficulty; until these obstacles are overcome, our efforts to secure an established coal trade abroad can never be entirely successful.

The visits to the West Virginia and Kentucky coalfields of D. A. Thomas, the most influential figure in the British export coal trade, president of the great Cambrian colliery group and director or chairman in some 21 mining, shipping and selling companies, gave rise to much speculation as to the possible effect of his visits on our exports of coal. It was thought that he had decided to make more or less large purchases or investments in coal lands on this side, with the South American trade in view especially and that his companies would handle United States coals abroad, just as the Westphalian Syndicate of Germany handles British coals. As yet neither coal-land owners or export agencies have been helped, whatever may be the ultimate outcome; the purchase, at a bargain price,

of a small New River property, was the only actual investment made as far as is known though he is said to hold options on several large properties and has a permanent representative in this country.

BRITISH EYES ON WEST VIRGINIA FIELD

There is no doubt that some of the largest British coal interests, especially those interested in foreign bunker agencies, have given close attention to the West Virginia coal fields this year, probably on account of the near opening of the Panama Canal, which will undoubtedly open new markets to these coals. The British coal interests have probably not given more attention to the United States fields because their own business has been, and still continues, in such a prosperous condition, both as to prices and tonnages. The exports of British coals have been greater and the prices obtained higher in 1913 than in any previous year.

The Pocahontas Fuel Co., the largest shippers of Pocahontas coals and probably the largest exporters of coal in the country at present, have shipped during the year, about 250,000 tons of coal abroad; it is also stated by one of their officers that they have closed contracts for some 700,000 tons of export coal for shipment in 1914.

The Consolidation Coal Co. have their own offices in Genoa and have shipped a few cargoes to Italy during the year, mainly Georges Creek coal; this fuel has not, however, the heating value or low ash of the best Welsh or Monmouthshire coals. This company has shipped about 125,000 tons of screened Fairmont coal to the Egyptian State Rys. during the past 18 months, but does not seem to have secured any of this business for 1914, for reasons variously stated, but probably because it did not pay as well as the home markets.

It has been rumored that a large Pittsburgh coal company has secured important contracts for gas and steam coals abroad, some 5,000,000 tons being the total given; this amount is obviously incorrect; 500,000 is more likely the correct figure.

During the last two or three months much space has been given in the daily papers to the operations of a syndicate which had acquired options on most of the desirable New River coal lands and was said to have secured the necessary capital for purchase in England. Five million tons of this coal was to be shipped abroad and the United States export trade revolutionized. While there is no doubt that options had been secured on a large tract of New River land, although not nearly so much as was claimed, evidently the cash was not raised, as the return of their representative from England was followed by a request for six months' extension of the options and a further 90 days' grace.

AMERICAN COAL ABROAD

During the year several of the larger coal-selling agencies have had representatives abroad, with a view to future business, but it is not as yet evident what they accomplished as to future deliveries.

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A small privately owned railroad in northern Italy has closed a contract for about 22,000 tons of United States coal, 1914 delivery, said to be Pocahontas coal, at a price of about \$5.63 per gross ton, which, at prevailing ocean freights, will net the shipper about \$2.72 f.o.b. Hampton Roads.

An opportunity was given one of the larger New River selling agencies last spring to supply a large tonnage, 240,000 tons, to one of the foreign state-owned railroads, but the deal fell through partly on account of the scarcity of suitable coal and partly because of price.

As yet the United States coals have made but little inroad into the foreign markets for manufacturing and railroad fuel, most of the coal shipped abroad having been for ships bunkers.

So far, the efforts of the United States shippers seem to have been largely centered upon Italy and with reason. While France imports more coal, a large part of such imports is made up of Northumberland and Durham coals, as well as Welsh, and the receiving ports, with two exceptions, are on the North French coast, where the United States coals cannot compete, owing to the short distance from the British shipping ports.

EXPORTS TO SOUTH AMERICA

The year's coal exports to South America have shown a healthy increase; it is in this direction that the greater possibilities lie for United States coals, as the consumption is already large and increasing every year with the development of the country, while the possibility of return cargoes is more likely. It is true that the British and Australian coals are holding their own in this direction, yet coals from this country have been tested with excellent results and some steady business been secured, especially in Brazil and the Argentine Republic.

Shipments from Hampton Roads to Para, Manaos and the Amazon have been kept up under existing contracts and the buyers have not only obtained good results from the use of the coals shipped, but have made money from their sales to users.

Although there have been rumors afloat during the year that United States exporters were to build colliers for

the foreign trade, no steps have been taken, so far as is known, beyond the making of inquiries as to costs, etc.; the largest exporting company seems content to get into the foreign market and to await the return of lower ocean freights, with an increased supply of tonnage available, although the same firm is said to have lost an important trial order from the French Admiralty through inability to charter at the right time.

The building of new coal piers by the Norfolk & Western and Chesapeake & Ohio R.R., to be put in operation shortly (the Norfolk & Western pier in January and the Chesapeake & Ohio pier in March) will undoubtedly give an added impulse to the export trade, as these piers will ensure quicker despatch to ships and less breakage of coal in dumping.

AN AWAKENED INTEREST IN EXPORT BUSINESS

The awakening of interest in the foreign trade during 1913 has been shown by the attention given the question by several of the coal-trade papers. But, with the exception of the COAL AGE, none of these papers have paid much attention to the crux of the whole situation, namely, ocean transportation, nor have they discussed the proper methods of selling and handling our coals in foreign countries or the necessity of proper preparation to meet conditions. Yet these are the very rocks on which many of the efforts to enter the foreign markets have wrecked themselves; our so called modern and efficient business methods have often been ridiculed by our foreign competitors and foreign buyers.

It would seem far better to adapt our methods to suit existing conditions and possibly change gradually their ways to ours than to try, as we have done, to thrust upon them what they do not desire; the mere fact that their customs and ways are different from ours does not prove that theirs are wrong.

Notwithstanding all this and our past failures, the year 1913 has brought forth enough success to show that the United States coal exporters are in earnest and intend to persevere until their coals become a permanent and growing factor in the world's coal trade.

Marketing and Shipping Conditions on the Atlantic Coast in 1913

BY G. G. WOLKINS*

SYNOPSIS—The year just closed was distinguished by the highest average prices that ever prevailed; \$2.85 was the base price for Pocahontas, New River and Georges Creek, and this remained firm into December. The sustained high level for the better Pennsylvania grades was a striking development of 1913, as well as the increased foothold they secured in this market. A surplus of all kinds of water transportation the last of the year. Anthracite was generally firm and in a satisfactory position. Independents were little heard from the second half-year. The Pennsylvania state tax was a feature of anthracite trade.

Although 1913 early sagged off from the panicky conditions of November and December, 1912, yet in the main

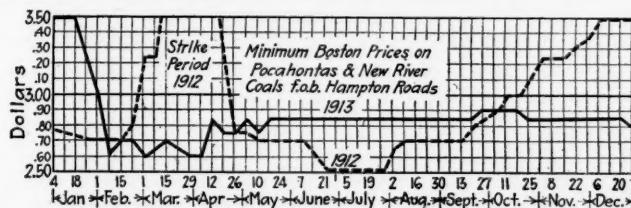
it was a satisfactory year. It was particularly so to operators as they netted higher average prices than had ever been obtained before. There was a pronounced labor shortage in most of the districts that somewhat curtailed output; here and there as in the New River field labor difficulties cropped out, and there have been weak spots in the market; but as a whole, the coal trade has enjoyed 12 months of flourishing and remunerative business.

LABOR TROUBLES AND COAL PRICES

The only conspicuous flare-up was along the Chesapeake & Ohio Ry., centering in the Kanawha and New River districts, but the actual suspension in New River lasted only about five days and some of the mines were not affected. Settlement came through concessions largely on the part of the operators, and July 7 practically all the

mine workers were back at their places. Since then a shortage of men has been the rule in West Virginia and in many parts of Pennsylvania, but as it turned out, very little more coal could have been absorbed than was mined, without seriously affecting prices.

Since July 1 the market has largely turned on the output in West Virginia. That was for several weeks a matter of much anxiety with consumers in New England, but at length in September, as advance stocks began to pile up and fears were correspondingly allayed, the scale turned, and late in October it was apparent production would be ample for all needs. Thereafter market conditions were as easy as normally in June and July. Spot coal sold down to the season contract figure through the fall and while several times it seemed as if the \$2.85 price was on the point of wobbling, it safely cleared all obstacles and remained firm to the end of December.



It took months, however, for the situation to clear and the market settle down. After February, when the last echoes of the tight winter market had faded away, there was a long spell of dullness. The spot market was less than the announced contract price by quite a margin, but beginning in March a more hopeful spirit took hold and through the rest of the spring there was a firmer, though tempering market. By June some of the large buyers realized they had over-stayed, and there was enough quiet hurrying to cover to lift most of the operators out of the slough and put them in position to command the prices that up to then they had only hoped for. Then came the strike talk in New River and business was plentiful for all grades until well into the fall.

INCREASED DEMAND FOR PENNSYLVANIA COALS

The high average price of the better Pennsylvania grades was a notable feature of 1913. For these coals to command the figures they did, month after month, with no particular shortage of cars, or anything more than threatened upsets in West Virginia, has certainly been a remarkable development. Instances could be multiplied where coals from Clearfield, Somerset and Cambria Counties have made inroads on tonnage that has always been considered "fixed" for Pocahontas and New River. There has been a great light in this respect in New England during the past year. A considerable quantity of these coals of known origin has found its way into the bunkers of off-shore freighters and liners, a thing practically unheard of here except in stress times.

In general, 1913 has helped bring home to consumers some plain facts. It has shown them they must year by year face a constantly mounting fuel cost; it has shown that the very highest grade coals like Pocahontas, New River, and Georges Creek are each year growing more susceptible to an increasing demand for export and for Government use; and that New England must depend more and more upon the quality coals of Pennsylvania. It will be interesting to see the developments along this line in 1914.

From "free coal" in the new tariff there is little help for the New England consumer. Cape Breton coal is the only grade imported to any extent, and it is enough inferior to the better American coals, while mining and trans-shipment are so expensive, that cutting out the 45c. duty is expected to have practically no effect. The use of provincial coals is confined to special cases and no marked change is looked for in that respect.

POCAHONTAS AND NEW RIVER

The most marked feature of the Pocahontas and New River situation was the remarkable strength shown by the season price of \$2.85 f.o.b. Hampton Roads (\$1.45 at the mine). For a time in the early spring the prospect was at least doubtful, but in March, when spot prices began to be hammered hard the rival interests got together and tidewater accumulations decreased. Thenceforth the market was held in impressive fashion and 1913 was a banner year so far as returns were concerned.

The year opened with slow loading at the piers and prices firm at \$3.50@3.60 f.o.b. and \$4.50@4.75 on cars Providence and Boston, but with the actual movement pretty well confined to contract business. Later there developed a receding market, and in late January signs of the new contract season appeared in rumors of a \$2.85 price. In 1912 the top season price had been \$2.70, and by far most of the tonnage had been closed at \$2.50@2.60, so among buyers there was small faith in the stability of the new price. This was emphasized when some of the shippers, pressed with coal, let the spot price down to \$2.60 and \$2.70, but as March went by and the old contract season ended, the market inspired more confidence. Seasonable weather helped steady prices and gradually it appeared that a volume of inland business had been covered at 15c. over the 1912 basis. But the large corporations were slow entering the market; it was felt conditions did not warrant so sharp an advance, and it was not until the Chesapeake & Ohio labor situation began to be talked about, and restriction became effective, that purchases were made to any extent, and then only with a clause protecting the buyer against a decline.

A FIRM MARKET TO THE CLOSE OF THE YEAR

The recognition granted in the Kanawha district made it seem sure the New River operators must either concede important points or face a more or less serious strike. For several months the issue was in doubt and as usual buyers pretty generally took the worst view of the outlook and made the \$2.85 contract figure so firm that by June not only were the agencies comfortably supplied with business, but most of them were so cautious over futures that they declined accepting additional orders for any form of deferred shipment. Certainly for a time there was much apprehension, and it was only after mining was resumed that New England settled down to breathe easier.

Prolonged detention was then the rule at Hampton Roads for several weeks and heavy demurrage bills were paid. Pocahontas output was practically sold up for months to come, and New River was down to 50 per cent. normal; \$3.15 was the emergency price. The contract price, therefore, looked sure for the balance of the season and about Aug. 1 there was another, although mild, period of anxiety. It was soon plain, however, that a quiet time would follow and late in August \$2.85 was

in view as the spot figure, the agencies that had been shy of taking contracts leading the way.

Demand and supply were well balanced, although most of the coal at tide was applied to old obligations. It was hard to rouse interest, but New England manufacturers continued to drive for deliveries on contract until their stocks were well beyond what they have come to regard the safe point, that is, the utmost they can store.

So with varying prices and an upward tilt once in awhile on spot coal, now to \$2.90, now to \$3.10, the market went mulling along until in November the larger consumers sought rather to have deliveries postponed, and, taking into account the tonnage of Pennsylvania grades that was taken when Hampton Roads shipments were slow, it was plain New England had absorbed all the advance supply that could be comfortably cared for. Then, too, general business conditions were slackened and consumption had decreased materially. A dull market ensued, "market cargoes" appeared although in a fugitive way, the on-car price at Boston dropped to \$3.70, a price

above other noncoking coals, but in this market especially the coal is popular and as it turned out the shippers had all the orders they could manage. In June began a slowing up of deliveries in sympathy with the situation at Norfolk and Newport News, a labor shortage began to be felt, and the district was pushed to keep up with requisitions in hand. Late in July the shippers were far behind on obligations, and only dribbling amounts came through to Philadelphia and New York. Through September and October there was little available at any of the ports, but Nov. 1, Georges Creek, from being the scarce coal in the market, once more came into adequate supply. The demand was light through November and December and the year closed with only moderate inquiry. So much Pennsylvania coal had been purchased in this section that late in the year Georges Creek for spot sale rather went begging.

The season price was \$2.92@3.02 f.o.b. Philadelphia and \$3.22@3.32 f.o.b. New York, the year beginning Apr. 1, 1913.

RECEIPTS OF BITUMINOUS COAL BY SEA AT BOSTON, SHOWING PORT OF SHIPMENT*

| | Baltimore ¹ | | Norfolk ² | | Newport News | | Philadelphia | | New York | | Totals | | Foreign ³ | |
|-----------------|------------------------|----------------------|----------------------|---------|--------------|-----------|--------------|--------|----------|-------|---------|---------|----------------------|-----------|
| | 1912 | 1913 | 1912 | 1913 | 1912 | 1913 | 1912 | 1913 | 1912 | 1913 | 1912 | 1913 | 1912 | 1913 |
| January..... | 100,198 | 88,653 | 122,696 | 168,131 | 77,108 | 50,171 | 9,148 | 33,702 | ... | ... | 309,150 | 340,657 | 21,450 | 37,391 |
| February..... | 124,610 | 77,186 | 114,579 | 221,436 | 71,958 | 78,265 | 6,986 | 15,161 | ... | ... | 348,133 | 392,048 | 39,820 | 25,200 |
| March..... | 125,943 | 94,407 | 163,033 | 227,697 | 58,555 | 81,359 | 12,201 | 22,433 | 1,094 | 1,094 | 359,732 | 426,990 | 29,449 | 26,445 |
| April..... | 125,585 | 95,767 | 116,909 | 232,210 | 89,787 | 88,530 | 20,520 | 16,255 | 893 | 893 | 353,694 | 432,762 | 18,700 | 27,500 |
| May..... | 119,187 | 105,849 | 185,600 | 195,931 | 101,416 | 77,750 | 59,991 | 33,950 | 4,440 | 800 | 471,634 | 414,280 | 27,800 | 13,300 |
| June..... | 106,506 | 112,934 ¹ | 151,600 | 179,936 | 90,563 | 80,834 | 29,882 | 53,195 | ... | ... | 378,560 | 426,899 | 25,500 | 15,750 |
| July..... | 105,320 | 123,784 ¹ | 159,866 | 160,515 | 53,042 | 56,445 | 19,298 | 62,506 | ... | ... | 339,256 | 403,250 | 25,250 | 21,876 |
| August..... | 128,054 | 110,795 ¹ | 163,995 | 222,974 | 120,663 | 57,646 | 20,752 | 74,903 | ... | ... | 433,464 | 466,318 | 26,300 | 15,750 |
| September..... | 129,114 | 71,577 | 156,038 | 242,290 | 97,836 | 57,571 | 30,737 | 59,458 | 600 | 600 | 414,325 | 430,896 | 21,450 | 13,300 |
| October..... | 92,340 | 86,444 ¹ | 158,600 | 205,438 | 106,765 | 19,144 | 49,925 | 65,835 | 1,064 | 1,380 | 408,703 | 378,241 | 20,600 | 15,247 |
| November..... | 86,843 | 89,554 | 164,019 | 208,275 | 29,173 | 38,438 | 39,081 | 46,769 | 1,100 | ... | 320,216 | 383,036 | 27,600 | 24,000 |
| December..... | 114,564 | 107,564 | 149,797 | 213,573 | 48,937 | 53,450 | 23,813 | 67,464 | 1,542 | 1,542 | 338,653 | 442,057 | 25,207 | 33,900 |
| Total 1913..... | 1,361,994 | 1,836,750 | 945,803 | 322,334 | 9,639 | 4,937,428 | | | | | | | | |
| 1912..... | 1,361,994 | 1,836,750 | 945,803 | 322,334 | 9,639 | 4,465,520 | | | | | | | | |
| 1911..... | 1,576,397 | 1,218,391 | 921,220 | 381,961 | 3,776 | 501,1745 | | | | | | | | |
| 1910..... | 1,595,554 | 795,475 | 1,243,857 | 292,636 | 25,515 | 3,954,251 | | | | | | | | |
| 1909..... | 1,302,729 | 561,388 | 1,088,412 | 436,164 | 4,730 | 3,393,423 | | | | | | | | |
| 1903..... | 481,111 | 314,505 | 596,439 | 595,824 | 93,940 | 2,081,819 | | | | | | | | |
| | | | | | | | | | | | | | | 1,226,134 |

* Courtesy of the Boston Chamber of Commerce, Statistics Department.

¹ Includes small shipments from Washington and Georgetown. ² Lamberts Point and Sewalls Point. ³ Almost exclusively from Louisburg, Cape Breton, except during 1903 when a large part came from Great Britain.

that would net \$2.70@2.75 f.o.b. Hampton Roads, but the contract price continued to the end of the year without wavering on the part of any important shipper.

Price shading was the exception in 1913, and after March the market had throughout a strong undertone, for even though in the late fall, when things promised to be slack, the export trade came to the relief of the larger agencies and they pulled through in easy shape.

GEORGES CREEK COALS

As in the case of Pocahontas and New River, Georges Creek had a favorable year. The tonnage coastwise was less than in 1912, but the contract price effective Apr. 1 was 15c. in advance of 1912. More than any other grade that reaches this market it is sold on contract and is less subject to the fluctuations of the open market. By far the largest volume of it is placed in transportation owned or controlled by the shippers who are also operators and that is an element in attracting tonnage.

January was a month of slow loading, and few shipments, but into February Georges Creek came down freely on orders. Through the spring it was only intermittently in good supply, for Government colliers last year seemed to play a larger part in Baltimore and Philadelphia loading; \$2.85 f.o.b. Baltimore (\$1.67 at the mine) was named the net contract price and a comprehensive business was soon taken on. There was some hesitation by large buyers over the differential asked

Besides the stronger hold acquired by coals from the Pennsylvania districts on consumers in New England, the increased differential between the better and the inferior grades was another marked development of 1913. They more than held their own, although the extreme caution of Baltimore and Hampton Roads shippers helped to a considerable degree for more than half the year. There are signs that many of the better grades made significant gains in tonnage, and it will be hard for Southern coals to displace them.

The market was more even than has been the rule in recent years. After the slump in late January, the situation was rather slow developing; \$1.25 at the mine was a fair price for the less favorably known Clearfields, and from that up to \$1.50 was asked on the more popular grades. Generally, 10c. more than in 1912 was quoted for season business, but with an ample car supply and not a particularly encouraging outlook for manufacturing, buyers were slow committing themselves. Soon, however, the 15c. advance at Hampton Roads made a broader demand for Pennsylvanias, and through the spring and summer months there followed a healthy activity for practically all the desirable varieties.

In April most of the high-priced grades had been closed on staple contracts, and thereafter until November there was only a small volume offering from time to time on

spot sales. Many of them were withdrawn from the market and operators put so much dependence on the West Virginia labor complications that up to July they were reluctant to accept orders for deferred delivery. Prices were 5@10c. higher in May than in April, and there was complaint at the slow loading on account of accumulated orders. In June it took no effort to sell all the good Pennsylvania coals that came to tide. A mild stringency appeared and an increasing tendency to decline orders was shown. Cambrias and Somersets touched \$1.70, and most operations were under reduced output, the lack being due to small labor difficulties and a general shortage of men. But just as a wide market was opening and the trade was right at the point of buying with not so much regard to quality, the news of the collapse in the New River strike came and the demand in New England sank to more nearly normal. From July on for three months or so there was a moderate market, with now and then a short spurt in response to tight conditions on Pocahontas, New River and Georges Creek, but in the main with prices quite even.

There was still a deal of caution over futures, operators hoping that somehow there would come a turn, but the only turn that came was in November when it appeared that even the producers of the choicest grades were quietly looking for milder business. Unexpectedly enough hand-to-mouth buying developed to tide over, and only in late November and early December did the choicest grades appear in any volume at tidewater points in excess of contract requirements. There was a time in October when inquiry was active for Cambrias and Somersets suitable for bunker use and prices again reached \$1.65, but the ordinary low-priced Clearfields were hard to sell at a dollar flat. The Atlantic seaboard was more discriminating than was formerly the case.

TRANSPORTATION

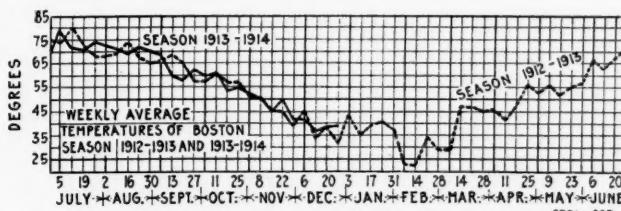
There was decidedly less fluctuation in water freights in 1913 than for several years past. Except for the 95c.@\$1 rate that obtained on large vessels, Hampton Roads to Boston, in January and February and soon sagged off, freights were on a basis of 5c. up from 1912, or 75c. to Boston. A number of season charters were closed at that rate, and it was the exception when a spot schooner or barge got a higher freight after Mar. 1. The tonnage situation was easy thereafter, the latter part of the year showing a surplus of steam as well as sail and barge transportation. Most of the coal to New England is in steamers or over tonnage that is under contract and the current demand was light throughout the year.

The Reading barge rate on bituminous was reduced about Mar. 15 from 90c. to 80c., Philadelphia to Boston, and this rate obtained until Nov. 1, when to most Eastern points the 90c. rate was resumed. On Long Island Sound for New York loading the market has see-sawed from 40@50c. the whole season. The advance of 10c. in October on certain of the anthracite barges, making the rate to Providence 60c. from lower harbor ports instead of 15c., has made it easier for outside boats to command the 50c. rate.

ANTHRACITE

Hard-coal trade on the whole enjoyed a satisfactory year in New England. The mild weather in January and February enabled dealers to get through to the end of the previous season very comfortably, and while in

March the market was spotty, April was not at all the disappointment that was predicted. Numerous consignees failed to get the share of minimum-priced coal that they were counting on. The originating companies proved to be well supplied with orders, and some sizes, notably broken and pea, were in relatively short supply. The larger sizes like broken and egg were in many cases put back through the breakers to help meet the tremendously increased demand for stove.



May showed a further shortening up. Receipts were far behind those of April and slow dispatch was the rule at the piers of those companies that have the call for this market. Shipments had begun in April with a rush and buyers feared for a time they would be swamped, but in May there was ample business and enough left over to run the mines full through June. From then on there was a steady demand for the rest of the year, broken and stove especially being the sizes in shortest supply. As early as May orders for broken were declined and the proportion of stove in any one cargo was cut down to such extent that it became embarrassing to dealers who were in no position to take the amount of egg and nut necessary to get their requirements of stove. This situation grew more drastic as the season advanced and in November premiums of 50c. up were offered for cargoes mostly stove.

Individual coals did not continue so important a factor here as was looked for. Low prices were made in February and March to draw business to these coals; at one time in March egg was offered at a discount from the April circular, but sales were only of small tonnages. Dealers for the most part confined their barges to the companies who looked after them during the hard times in 1912. Instances could be multiplied of retailers who placed their April and May orders with certain of the originating companies when they could have saved 15@25c. a ton by buying of independents; the feeling against the shippers of "premium" coal in 1912 was that strong. In early January as high as \$7.60 was paid alongside Boston, \$1.90 in excess of the circular. Water freights and a stronger demand in other directions soon eliminated all the scattering cargoes through the summer. By fall they had practically disappeared from the market.

Anthracite mines were worked only four days a week during July and August, and this curtailment had the effect of keeping inquiry active through what are ordinarily the dullest months. To the end of December there was hardly a let-up in the urgent call for deliveries all through the fall. Large storage depots in the East were practically bare the whole season. Retail trade was exceptionally good until November when it eased off into a weather market. Boston prices were advanced three times, 25c. each time, until Oct. 2 they were at \$8.25 for nut, the 1912 high price for that size. Dealers have held closely to the policy of keeping storage as well filled as possible and those who were far-sighted enough to take extra quantities of stove when such could be had deserve credit for protecting their customers.

New York Market Experiences a Period of Unusual Prosperity

SYNOPSIS—The year was a period of satisfactory business all along the line, but particularly in bituminous. Prices ruled well above prevailing figures of 1912 on both spot and contracts. Anthracite was characterized by an almost year-around shortage of stove coal and heaviness in egg. The new Pennsylvania state tax on hard coal and a readjustment of demurrage rulings in New York Harbor were among the important developments of the year.

Bituminous Market

BY J. W. WHITELEY*

For some years past the bituminous market (barring short periods of abnormal business, due to labor trouble) has been almost continuously weak and prices have ruled at figures which showed little or no profit. The summer months, more especially, showed particularly sluggish conditions. About the only relief was the usual car shortage along in the fall months, which temporarily affected prices; but following the close of navigation on the Lakes quotations usually sagged to somewhere near the summer level.

CAUSE OF THE HIGH PRICE LEVEL

During the winter of 1912-13, however, we ran into an inflated market, prices reaching their highest point about Christmas time and receding thereafter to more nearly normal figures. Some of the large buyers of bituminous have for the last few years become more or less indifferent about closing up contracts, experience showing that they could buy at reasonable figures throughout the year causing a tendency toward laxness in meeting contract obligations. Last winter, however, many of those who had not closed found themselves paying exorbitant prices and as a result this class of buyers learned the wisdom of contracting. This developed a more healthy demand last spring for contract shipment.

There were a number of consumers who did not close at the usual contracting season and later on found it more or less difficult to cover their requirements on a satisfactory grade of fuel. The high prices of last winter furnished an incentive for operators to keep a considerable portion of their tonnage free; in fact some operators made no contracts, feeling that there would be recurrence of the conditions prevailing last year. The fact of their holding aloof undoubtedly had a considerable bearing on the market; it will also be remembered that in the spring of 1913 the Ohio Valley was visited by severe floods which seriously interfered with the operation at the mines. It is estimated in some quarters that the shortage caused by this disaster would run somewhere between 5,000,000 and 10,000,000 tons.

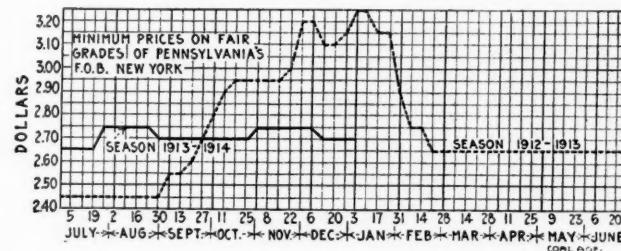
The requirements in the West were unusually heavy, tonnages being closed for Lake shipment at good figures early in the season. The facilities on the Lakes were taxed heavily, and with the large demand in this direction, considerable tonnage of coal tributary to the Eastern market was diverted West. Notwithstanding the generally

pessimistic feeling regarding the new legislation on the tariff and the currency question, the coal business at least has been exceptionally heavy, the coal-carrying roads reporting a movement in excess of any former year.

LABOR CONDITIONS AND THE STRONG MARKET

Labor conditions throughout the regions have been a potent factor in the situation. There have been few companies who have had sufficient miners to operate full capacity. While there were no disturbances of any moment in Pennsylvania, the strike in West Virginia fields was serious and of considerable duration. The car supply for a considerable period during the summer months was also short and the combination of these conditions had a noticeable effect on the market.

Perhaps one of the most notable features in the trade during the past year has been the action of quotations on slack. In former years the heavy demand for screened coal, particularly for Western shipment, has resulted in slack being a drug on the market, selling in some cases at less than 25c. at the mines. When compared with \$1.10@1.20, which figures were realized this year, it will



be seen just how stiff the situation on slack was; the price was about the same as that asked for run-of-mine.

While indications pointed to a higher bituminous market during the late summer of 1912, the signs of the early fall of the past year were to contrary conditions. The failure of the railroads to secure an advance in freight rates and the increase in wages they were compelled to meet made it necessary for them to practice more or less economy in other directions; as a result orders for steel equipment were consequently smaller. The noticeable decrease in construction in the building trades, in which a considerable amount of iron and steel is used, also had its effect and with the slowing up in this field of endeavor, the demand for cars was naturally less and the production of coke was necessarily reduced.

This served the double purpose of improving the car supply and placing more free coal on the market. The West became over-supplied, and at the close of navigation there was a considerable tonnage available for Eastern shipment. Not only that, but the coal which had been diverted West came back into the Eastern markets. Anticipation of a reduced tariff at about this time and the uncertainty of the proposed currency legislation caused more or less hesitation in the business world. The net result was, of course, a drop in the price of coal.

*Whitney & Kemmerer, 143 Liberty St., New York City.

SUNDAY COMMENTS

The Pocahontas and New River coals which cover the major portion of the East, from Fall River to Providence around the cape, were maintained at reasonably steady prices throughout the season, and were in short supply from time to time. As a result a considerable tonnage of Pennsylvania coals moved in that direction.

A feature of note in the trade is the gradual education of the bituminous consumer. Buyers are no longer governed by the price alone, but have become quite discriminating. They realize that a difference of 5c. or 10c. per ton on the mine price is, after all, a more or less negligible quantity, more especially when the freight to destination is added. A few cents per ton at destination represents but a small percentage on the delivered price. This trend of conditions is unquestionably advantageous to both the operator and the consumer. The producer feels and knows that by giving his coal the proper preparation and attention it will be appreciated by the consumer and bring a better return. The buyer, on the other hand, gets a better product and is able to select the coal which may be best adapted to his particular requirements.

On the whole, even though the market has taken a considerable slump, the year cannot be considered other than a most satisfactory one for the bituminous trade. Now that the legislation, about which there has been so much apprehension, has become a law, it is believed that after a readjustment to the new conditions has been effected, the business of the country will go ahead again without interruption.

The normal annual increase in the demand for bituminous coal in this country is estimated at about 10 per cent. The increased production for 1913 over 1912 was probably less than the normal increase, which accounts, in a large measure, for the satisfactory returns to the operators. There is no reason to doubt that the demand will show a normal increase with the year 1914, and business should continue for that year on a satisfactory basis.

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The Anthracite Market

By G. W. SEILER*

Conditions in anthracite during the past year have been quite satisfactory, both as to output and prices, although it is doubtful whether this year's production will exceed 1911. No comparison can be made with 1912, due to the suspension in mining in the earlier part of that year.

Mining continued throughout the year without any noticeable interruption. Labor troubles occurred during the summer months at some of the collieries controlled by the Lehigh & Wilkes Barre Coal Co. and the Lehigh Coal & Navigation Co., but these disputes were quickly settled.

During January, February and March, the market was overloaded with all sizes of anthracite, due to an exceedingly mild winter. No doubt some of the large profits enjoyed by speculators during the close of 1912 were greatly reduced during the earlier months of 1913, in disposing of high-price coals at low figures. Steam sizes of the poorer grades during this period had an exceptionally hard time in finding prompt disposition.

The Wyoming grades enjoyed a steady output and

*Sales agent, A. W. Hillebrand Co., No. 1 Broadway, New York City.

prices held firm throughout the year. Occasionally a surplus of these good grades in No. 1 and 3 buckwheats would accumulate, but no exceptional difficulty was experienced in moving them where a slight inducement in price was offered.

In the Schuylkill & Lehigh coals, No. 1 buckwheat usually was long and prices sacrificed accordingly. Most shippers from the lower regions avoided shipping large tonnages of No. 3 without specific orders on hand.

The average prices throughout the year on the poorer grades of steam sizes were: No. 1 buckwheat at \$2.30; No. 2 buckwheat, \$1.85; No. 3 buckwheat, \$1.45.

April brought a decided change in conditions; this was naturally expected as the usual deductions from winter prices on the prepared sizes were effective Apr. 1, and also renewal of contracts on steam sizes usually takes place about that time.

The companies issued a circular on Apr. 1 wherein the prices on anthracite were as follows:

| | | | |
|-------------|--------|-----------------------------------|--------|
| Broken..... | \$4.50 | Buckwheat (Wyoming)..... | \$2.75 |
| Egg..... | 4.75 | Buckwheat (Schuylkill and | |
| Stove..... | 4.75 | Lehigh)..... | 2.50 |
| Nut..... | 5.00 | Rice (Schuylkill and Lehigh)..... | 2.00 |
| Pea..... | 3.50 | Rice (Wyoming)..... | 2.25 |
| | | Barley (all grades)..... | 1.75 |

Contract prices on the cheaper grades of barley, particularly Reading coals, were made at \$1.50 f.o.b. Port Reading. The regular increase of 10c. each month on prepared sizes from May 1 until Sept. 1 was applied. During April, May and part of June the companies, also individuals, were overloaded on orders for prepared sizes and collieries were working full time during that period.

THE PENNSYLVANIA TAX AND HEAVINESS IN EGG COAL

On July 1 several of the companies found themselves compelled to charge a state tax of $2\frac{1}{2}$ per cent. on the mine prices of all sizes. This act was evidently accepted as being constitutional because there seems to be no difficulty with the companies in making the dealer pay. The $2\frac{1}{2}$ per cent tax averages an increase of about 10c. on prepared sizes and 5c. on pea size. The operators have not been charging the tax on the junior grades.

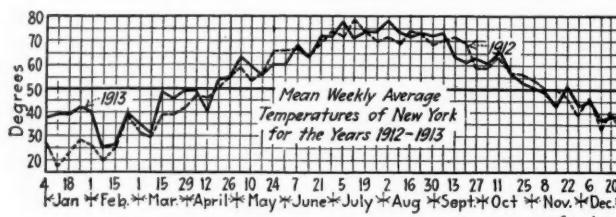
During July some difficulty was experienced by the individuals in moving egg and nut sizes, but in most cases a reduction of 10 to 25c. soon relieved the situation. In fact the tremendous demand for stove coal starting in April and continuing up to the middle of December was a great help to the individuals in moving their long sizes. Undoubtedly this unusual demand for stove was brought about by the difference in price between this and nut. In former years nut was usually the popular size in the domestic coals and for that reason an increase in the price of 25c. was made over a year ago.

The disposition of egg size is quite a problem with the operators, as the only time this size seems to move promptly is in the early spring months when the low price prevails or in unusually cold weather. This is probably due to the fact that the largest users of this size are the apartment houses who fill up their bins in the spring months while the coal is not used until cold weather arrives. Unfortunately the collieries cannot avoid making this grade unless egg is broken down into smaller sizes and as that would simply increase the tonnage of steam sizes, it is impractical.

RAIL MOVEMENT AND NEW DEMURRAGE RULES

All-rail shipments, particularly to Western points via

the Great Lakes, materially helped in preventing over-shipping tidewater points during the period from August up to the close of navigation. Individuals are now adverse to sending any surplus coal to tidewater points, due to the demurrage charges caused by detention at the railroad docks. Since March the Delaware, Lackawanna & Western, the Ontario & Western and Lehigh Valley railroads have added demurrage charges of \$1 per car for each day of detention after a free time of five days. Their tariffs also include a clause which most shippers contend is unfair. This provides that if a vessel reports at the coal piers on an order calling for two or three sizes of coal, the shipper is not released from demurrage on any



of his coal standing, which is to be loaded into the reported vessel unless the entire cargo is immediately assembled. This has stirred up quite an agitation among large shippers who propose to bring the matter to an issue before the Interstate Commerce Commission at the next hearing.

The Lehigh Valley R.R. tariff on coal to the Perth Amboy piers does not allow the shippers to stock coal in bins on their piers for an indefinite period, as heretofore unless the shipper agrees to pay demurrage charges on the stocked coal the same as if it were loaded on cars. This ruling is quite a handicap to large shippers. Heretofore the permission to stock coal at the Perth Amboy piers avoided the disposal of individual grades in a crowded market at cut prices. This new ruling has changed conditions in such a way that the individual shippers are confronted with quite a serious situation. Some of the collieries situated on the Lehigh Valley have also other railroad connections, which permit them shipping their

products to various points of distribution, and, therefore, are not affected to any large extent.

On the other hand, these new rulings also have their good points as they will do much to prevent an accumulation of large tonnages at the various piers and a consequent general embargo. When an embargo is established at any pier it always has a tendency to break prices as the shipper is forced to either move his coal promptly or shut down until the embargo is removed. Of course, this serious situation does not confront the shipper unless line trade is unusually dull, but a crowded condition at tide-water points is a sure indication that all-rail shipments are lax.

AN EASING UP IN THE FALL

During August considerable tonnage kept moving to all-rail points with the exception of egg coal, and the large companies were compelled to stock this size, while individuals sacrificed at cut prices in order to keep their production moving. September and October brought on the usual stiffening in demand and prices, and during November stove size was selling at premiums ranging from 25 to 50c. above the circular.

On Dec. 1, the state tax was being charged by all the large companies. The unseasonable weather experienced during the last month of the year brought about a heavy slump in the market. Stove coal was easy, and the companies found themselves compelled to stock 10 per cent. of their output. The shutting down of collieries three days per week during the last two weeks of the month helped to give a better tone to the market at the close.

Looking forward to the coming year, there seems to be a general pessimistic feeling among manufacturers that an exceedingly dull period is ahead of them, due to the tariff changes. While there are some in the coal trade that express this same feeling, others seem to be optimistic as to the future. The latter are of the opinion that if the country in general has confidence in the present administration and if business adjusts itself to the new conditions, there is no reason why the coal trade should not have a reasonably good year during 1914.

Connellsville Coke and the Pittsburgh Coal Markets in 1913

BY B. E. V. LUTY*

SYNOPSIS—A heavy Lake and manufacturing demand in the Pittsburgh region created an active coal market. Circular prices well maintained, with occasional premiums, until the cessation of Lake shipping. Connellsville coke market fluctuated sharply with prices generally adverse to the operators. Further incursions of byproduct coke noted and many believe that the last of the Connellsville coal will be shipped to byproduct ovens.

The year 1913 was one of heavy coal production in the Pittsburgh district, and in addition the market afforded much more satisfactory prices than the average. Of the two preceding years, 1911 had been poor both as to tonnage and prices, while 1912 was bad as to prices if not tonnage.

*627 Oliver Bldg., Pittsburgh, Penn.

Several circumstances combined to make 1913 a good year. The manufacturing demand was exceptionally large, as the industries were prosperous and the iron and steel mills tributary to the Pittsburgh district turned out the largest tonnage in their history. The railroads enjoyed a heavy traffic in the raw materials and finished product of the iron industry, and had a good business in general merchandise. The lake trade was exceptionally heavy, partly because the previous season had left the Northwest with very light stocks, and partly because there was a general expectation that the wage scale settlement for the two years beginning Apr. 1, 1914, would prove an unusually difficult matter, possibly involving a long suspension of mining, with a consequent late opening for lake shipments in 1914.

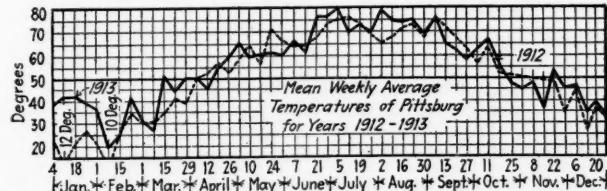
The Pittsburgh district operators, therefore, enjoyed a

heavy demand in 1913, which helped to make good prices, but that was not the only factor. The human element entered very largely. For several years the Pittsburgh district operators have felt that coal prices were too low. At the opening of the season quotations would be named predicated upon full operation and a moderate margin of profit, and then it would develop that under curtailed operation, due to lack of demand, and of men, or shortage in car supply, the cost of production would mount. Usually full allowance was not made in advance for the constantly increasing cost of mining due to governmental restrictions and safeguards thrown around mining by the voluntary act of the operators. Before the opening of the selling season for 1913, on Nov. 4, 1912, the Pittsburgh Coal Co. promulgated prices on a basis of \$1.30 mine-run. It was then that a new element appeared, for instead of the prices being cut generally in competition for contracts and spot orders, as had almost invariably been the case in immediately preceding years, the circular quotations were quite well maintained, and indeed still higher prices were obtained for a short period toward the close of the lake-shipping season.

PREMIUM COAL AND THE FALL RECESSION

Prices were thus in sharp contrast with those in 1912; that year opened with mine-run at \$1.15, but after the wage-scale settlement of Mar. 29 an advance was made to \$1.22½, covering the 5c. advance in the mining rate, but the market was cut deeper than ever, so that for weeks mine-run was easily obtainable at a dollar a ton.

The 1913 basis was: Slack, 90c.; nut and slack, \$1.05;



nut, \$1.25; mine-run, \$1.30; 3/4-in., \$1.40; 1 1/4-in., \$1.50; 1 1/4-in. domestic, \$1.55. These were the regular circular prices, with the customary 10c. concession to dealers, making lake coal \$1.30. There was some cutting, but very little, and the average realized price on mine-run and lake coal was probably all of \$1.25. In August coal began to grow scarce and the condition became rather acute by the beginning of September. Premiums could be obtained, but operators, as a rule, had nothing to spare after meeting contract obligations, and these they did meet as faithfully as physical conditions permitted.

On Oct. 1 a 10c. advance was made, and adhered to as long as there was little coal to sell. Later, demand fell off and the market began to decline. The 10c. advance was quickly lost, and the old prices began to be cut. The end of the lake-shipping season seemed to promise a demoralized market, but the situation was met by a great restriction in output. Monday, Dec. 1, the mines began operating at an average of about 60 per cent. capacity, when during the first 11 months of the year operations had averaged from 80 to 90 per cent. of full rated capacity.

Coal operators have rather studiously avoided making definite statements or predictions regarding the impending settlement of a new wage scale to replace the scale which expires by limitation Mar. 31 next. However, it

is quite generally understood that they contemplate a serious contest, if necessary, to shake out much that has accumulated in the scale through several successive settlements in which the men have had things decidedly their own way. Industrial conditions and prospects will, of course, govern to an extent, but it seems certain that the operators will approach the next settlement in a different mood, and with more harmony of action.

CONNELLSVILLE COKE

There were lively conditions in the Connellsburg coke market throughout the year, caused by the earnest effort of a group of operators to secure better prices, relative to the selling price of pig iron, than they had ever obtained before. For many years Connellsburg coke had sharp ups and downs. Owing to the practice of making semiannual and annual contracts, based largely upon what chanced to be the spot market at the time, and the spot market of a commodity which is not stocked to any extent is naturally one of wide fluctuations, it has frequently been the case that furnacemen paid high prices for their coke when they were getting low prices for their pig iron, and *vice versa*.

CONNELLSVILLE COKE STATISTICS FOR 1913*

| 1913 Week Ending | Production | | | Shipments | |
|---------------------|------------------------|-----------------------|---------------------|-----------|------------|
| | Merchant Production | Furnace Production | Total Production | Cars | Tons |
| Jan. 4..... | 156,382 | 227,822 | 384,204 | 11,397 | 384,831 |
| Jan. 11..... | 164,893 | 239,504 | 404,397 | 11,934 | 404,397 |
| Jan. 18..... | 175,847 | 253,981 | 429,828 | 12,662 | 429,097 |
| Jan. 25..... | 170,225 | 246,057 | 416,282 | 12,296 | 416,369 |
| Feb. 1..... | 172,755 | 249,998 | 422,753 | 12,482 | 422,932 |
| Feb. 8..... | 166,590 | 240,779 | 407,369 | 12,040 | 406,793 |
| Feb. 15..... | 177,049 | 256,392 | 433,441 | 12,911 | 436,902 |
| Feb. 22..... | 179,974 | 261,671 | 441,645 | 13,056 | 441,629 |
| Mar. 1..... | 176,854 | 255,791 | 432,645 | 12,780 | 432,127 |
| Mar. 8..... | 168,903 | 244,382 | 413,285 | 12,389 | 412,740 |
| Mar. 15..... | 182,313 | 263,181 | 445,494 | 13,236 | 445,459 |
| Mar. 22..... | 175,717 | 255,168 | 430,885 | 12,175 | 410,387 |
| Mar. 29..... | 145,060 | 208,873 | 353,933 | 9,681 | 326,068 |
| Apr. 5..... | 153,360 | 220,274 | 373,634 | 11,056 | 372,194 |
| Apr. 12..... | 158,058 | 212,618 | 370,676 | 11,530 | 392,273 |
| Apr. 19..... | 157,041 | 251,366 | 408,407 | 12,188 | 412,660 |
| Apr. 26..... | 160,759 | 254,989 | 415,748 | 12,146 | 413,788 |
| May 3..... | 158,948 | 244,121 | 403,069 | 11,840 | 403,703 |
| May 10..... | 163,678 | 250,808 | 414,486 | 12,085 | 412,096 |
| May 17..... | 162,850 | 246,578 | 409,428 | 11,921 | 406,294 |
| May 24..... | 154,936 | 241,968 | 396,904 | 11,651 | 394,492 |
| May 31..... | 158,079 | 243,242 | 401,321 | 11,808 | 403,070 |
| June 7..... | 160,484 | 248,531 | 409,015 | 11,900 | 407,157 |
| June 14..... | 161,400 | 249,208 | 410,608 | 11,962 | 409,693 |
| June 21..... | 159,024 | 243,281 | 402,305 | 11,691 | 401,866 |
| June 28..... | 162,217 | 247,782 | 409,999 | 11,981 | 411,499 |
| July 5..... | 121,045 | 212,313 | 333,358 | 9,665 | 332,528 |
| July 12..... | 138,207 | 252,263 | 390,470 | 11,274 | 388,876 |
| July 19..... | 145,924 | 253,780 | 399,704 | 11,534 | 399,848 |
| July 26..... | 145,389 | 247,944 | 393,333 | 11,320 | 393,634 |
| Aug. 2..... | 141,623 | 243,412 | 385,065 | 10,560 | 366,053 |
| Aug. 9..... | 144,883 | 247,942 | 392,825 | 11,408 | 397,362 |
| Aug. 16..... | 148,927 | 247,690 | 396,617 | 11,419 | 398,277 |
| Aug. 23..... | 146,809 | 222,667 | 369,476 | 10,755 | 369,323 |
| Aug. 30..... | 150,627 | 252,403 | 403,030 | 11,631 | 405,115 |
| Sept. 6..... | 144,496 | 224,963 | 369,459 | 10,609 | 371,270 |
| Sept. 13..... | 135,750 | 239,060 | 374,810 | 10,740 | 374,911 |
| Sept. 20..... | 140,388 | 238,049 | 378,437 | 11,137 | 389,742 |
| Sept. 27..... | 146,474 | 239,020 | 385,494 | 10,965 | 383,336 |
| Oct. 4..... | 141,850 | 216,448 | 358,298 | 11,095 | 388,347 |
| Oct. 11..... | 136,168 | 250,722 | 386,890 | 11,016 | 389,945 |
| Oct. 18..... | 139,382 | 240,223 | 379,605 | 10,879 | 384,013 |
| Oct. 25..... | 137,935 | 247,735 | 385,670 | 10,997 | 389,068 |
| Nov. 1..... | 138,430 | 236,800 | 375,230 | 10,088 | 356,546 |
| Nov. 8..... | 137,975 | 216,070 | 354,045 | 10,304 | 367,479 |
| Nov. 15..... | 137,858 | 219,694 | 357,552 | 9,328 | 333,609 |
| Nov. 22..... | 142,450 | 212,790 | 355,240 | 10,658 | 378,904 |
| Nov. 29..... | 133,170 | 210,938 | 344,108 | 10,001 | 356,785 |
| Dec. 6..... | 132,382 | 189,545 | 321,927 | 8,904 | 321,631 |
| Dec. 13..... | 133,250 | 174,540 | 307,790 | 8,447 | 305,745 |
| Dec. 20..... | 130,324 | 154,640 | 284,964 | 7,705 | 278,355 |
| Dec. 27..... | 125,030 | 111,055 | 236,085 | 6,425 | 233,581 |
| Dec. 29-31..... | 65,428 | 74,789 | 140,217 | 4,025 | 140,875 |
| Totals..... | 7,917,263 | 12,161,316 | 20,078,579 | 582,071 | 20,097,901 |

* From the "Weekly Courier."

At the beginning of 1913 prompt furnace coke was bringing \$4 a ton and more, and contracts had been made at various prices ranging up to \$3.50. The pig-iron market began to decline at once, and prompt coke fell with it. A group of operators who were allowing the Producers' Coke Co. to act as their selling agent, and had contracts ending June 30, determined that coke for the second half

ought not to sell at less than \$2.50. Much other coke was sold at slightly less, but eventually, for July, August and September, the \$2.50 operators did succeed in selling a considerable tonnage, month by month, at the \$2.50 figure. It became increasingly difficult to get the price and late in the year, when prompt coke was down to \$1.75, or possibly \$1.70, a \$2 price was named for the new year.

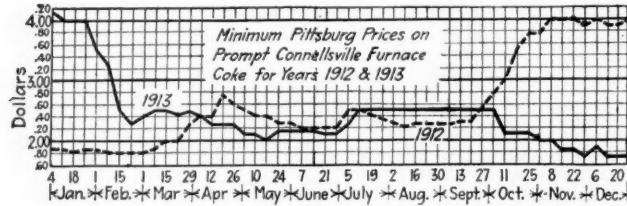
RENEWED STRENGTH AT THE CLOSE OF THE YEAR

In view of the previous market history, and the great decrease in coke consumption, it seemed rather improbable that the price would be obtained, but in the closing fortnight several sales at the full price were effected, indicating that coke offered at lower figures was limited in quantity or not satisfactory in quality to many consumers. Pig iron was then selling at approximately as low prices as in November, 1911, at which time prompt coke was \$1.40@1.45, and six-month contracts were made at \$1.55@1.60. The comparison indicates that while the oper-

sumption, was somewhat greater in 1913 than in 1912, by about 5 per cent., the production of Connellsburg coke was less, owing in part to there being heavier production by other and competitive regions, but chiefly because of greater production of byproduct coke, made at the point of consumption with shipped coal.

The contention of the Connellsburg coke operators for a relatively high price, \$2@2.50, is based upon a relatively high valuation for the coal acreage. The Connellsburg seam has sold at \$2000 an acre and more, and producing 7000 tons of coke per acre, carrying enough acreage for a 10- to 20-year life for the operation, this price for coke is necessary. There is the question, of course, whether the coke market should establish the value of the coal seam, or the market value of the coal seam should establish the coke market. With the operators it is a condition rather than a theory, for many of them have bonded their operations on the basis of a high value for the acreage and the bonds must be taken care of if the market can be so conducted as to do so.

In the final outcome the average price of coke and the actual realized value from the acreage will be determined by the rapidity with which consumers adopt byproduct coke. The trend is strongly in that direction, but coke consumption is also on the increase, and as the Connellsburg seam has a life of only about 20 years or less, at the present rate of exhaustion, an interesting contest is promised. There are those who predict that the last of the Connellsburg coal will be shipped to byproduct ovens, instead of going through beehive ovens at the pit mouth, but the average Connellsburg operator will not admit such a probability.



ators who held to a definite price have been much criticized they really have elevated the level of the coke market.

While pig-iron production, and consequently coke con-

* * *

Anthracite Shipments by Lake and the Buffalo Market in 1913

BY JOHN W. CHAMBERLIN*

SYNOPSIS—Lake shipments of anthracite break the previous high record by more than a million tons. No important changes occurred in hard coal circles. Bituminous operators experienced a period of unprecedented prosperity, though the year closed with the markets dull. Heavy tonnages were the rule and prices were maintained at an abnormally high level.

* *

Buffalo ships about four-fifths of the anthracite that is handled by lake and has increased shipments during the season of 1913 by nearly one-third. The shipment for the past season is a trifle more than five million tons, net, while the amount for 1912 was 3,925,583 tons and for 1911 it was 3,917,429 tons, this latter being the record up to that time. The cause of the slight increase in 1912 was that the mining suspension in that year cut off the supply till well into June. This means that there is a strong tendency to increase the movements by lake into the Northwest, and the limit is likely to be reached only when the maximum output of anthracite is obtained. At the same time there is a steady increase of shipment from Lake Ontario ports, most of which is confined to that immediate territory.

THE SITUATION IN ANTHRACITE

There has been no important change in the anthracite trade in Buffalo during the past year, either in personnel or equipment. The effort of the Government to dispossess the Delaware, Lackawanna & Western Co. of its shipping trestle at the mouth of Buffalo River, made at various intervals during the past 20 years or more, has again been laid aside temporarily, without apparently arriving at a definite settlement. The Government claims to own the site and also that the mooring of craft at the trestle to load coal is a menace to navigation. The public is divided on the question. There is a move to replace the old wooden shipping trestle with a modern ear dump, and one company has about concluded to make the change immediately as these frame structures are expensive to maintain and occupy excessive space.

Water shipments of anthracite for the past season will be divided about as usual among the four companies, Lackawanna, Lehigh Valley, Erie and Philadelphia & Reading. The Ontario & Western did not ship anything by water, as it occasionally does, confining its operations to Oswego. A few cargoes were shipped by Whitney & Kemmerer, who reopened an office in Buffalo more than a year ago.

*90 Johnson Park, Buffalo, N. Y.

As to the anthracite trade the outlook is for continued dullness till there is steady winter weather to stimulate buying. At no time during the past year has the consumer been enough concerned about his supply to clamor for immediate delivery. This is due to the fact that there has not been any really cold weather, for an unusually long time, including a great part of last winter. The Buffalo anthracite buyers and sellers now gage the trade by the prices obtained for independent anthracite, of which there is much more on the market since the suspension of the old practice of turning most of it over to the railroads at an accommodation price. When this coal sells at a premium over the regular circular the trade is brisk; it has not done so lately.

ANTHRACITE SHIPMENTS FROM BUFFALO

| Destination | 1913 | 1912 | Destination | 1913 | 1912 |
|-----------------|-----------|-----------|------------------|-----------|-----------|
| Superior | 1,697,445 | 1,243,450 | Menominee | 5,300 | 8,500 |
| Chicago | 1,445,422 | 1,195,350 | Washburn | 5,200 | ... |
| Milwaukee | 612,528 | 381,550 | Byng Inlet, Ont. | 3,800 | 1,175 |
| Ft. William | | | Hubbell | 3,200 | ... |
| Ont. | 395,048 | 281,750 | Dollar Bay | 2,100 | ... |
| Duluth | 320,963 | 160,930 | Cheboygan | 2,050 | 1,900 |
| Pt. Arthur, Ont | 161,092 | 168,900 | Parry Sound | | |
| Sheboygan | 109,500 | 135,500 | Ont. | 2,000 | 1,200 |
| Waukegan | 43,000 | 40,325 | Sturgeon Bay | 2,000 | 2,650 |
| Green Bay | 37,000 | 16,700 | Kewaunee | 1,647 | ... |
| Racine | 30,200 | 31,150 | Michipicoten | | |
| Manitowoc | 26,400 | 2,460 | Ont. | 1,500 | |
| Marquette | 21,500 | 18,775 | Pt. Washington | 1,200 | 1,300 |
| Hancock | 17,430 | 16,800 | Bay City | 1,000 | 8,950 |
| Houghton | 13,200 | 5,800 | Marinette | 850 | 800 |
| Kenosha | 12,510 | 9,300 | Pt. Colborne | | |
| St. Ste. Marie, | | | Ont. | 811 | 1,600 |
| Ont. | 12,000 | 10,499 | Alpena | 600 | 725 |
| St. Ste. Marie, | | | Blind River | 550 | 600 |
| Mich. | 10,900 | 13,200 | Marine City | 400 | 450 |
| Lake Linden | 9,600 | 3,000 | Thessalon, Ont. | 350 | 890 |
| De Pere | 7,250 | 5,250 | Minor ports | 23,897 | |
| Ashland | 6,750 | 18,100 | | | |
| Port Huron | 5,450 | 2,900 | Total tons... | 5,033,606 | 3,925,938 |

There has been much disturbance in the anthracite trade since the Pennsylvania tax law was enacted. The companies complied with the law with much reluctance, as they could see the argument of consumers in their effort to escape the payment of what they called the Pennsylvania taxes. At length most of the companies have added it to their bills, though they still appear to hope that it will be nullified by the courts.

THE BITUMINOUS TRADE

In the local bituminous trade there has been more change and news generally. While this market is mostly a jobbing or an agency one, there are about ten concerns that mine their own coal in the Allegheny Valley and neighboring districts. In 1912 they produced about 4,000,000 tons of coal. The output last year should be considerably more, on account of the great activity of the trade during the summer. There has been no particular change in mine ownership here during the year.

The chief change in the city offices was occasioned by the death of Cyrus H. Polley, who was at the head of the Seneca, Falls Creek and Francis mines, in the Clearfield district or vicinity. The vacancy was filled by the election of Harry Yates as president of the companies, and the appointment of W. M. Campbell, general manager. The retirement of Charles T. Faulkner from the management of the office of the Sterling Coal Co. was followed by the withdrawal of the agency. Mr. Faulkner is now at the head of the Western New York Fuel Co. J. Fred Morlock gave up the agency of W. A. Stone & Co. and organized the Morlock Collieries Co.

A new agency is that of the Baker Coal Co., of Boston, with F. L. White from the Boston office as the northern sales manager. This agency proposes selling the coal mined at the Pine Run and Cobaugh collieries in the

Allegheny Valley, of which Mr. Bader is part owner. The output includes considerable cannel coal, which is found along with the bituminous. The consolidation of the offices of the Pittsburgh Coal Co. and the Monongahela Co. gave occasion for the manager of the latter, J. Q. Clark, to organize the Monongahela-Youghiogheny Coal Co.

BITUMINOUS MARKET CONDITIONS

The bituminous year as a whole has been more active and more prosperous than ever before, in spite of the dullness of the market during December. For some reason, hardly understood by even the oldest member of the trade, the demand continued strong all through the warm months, so that it was difficult to get miners to produce or cars to transport the coal as fast as it was sold. Allegheny Valley operators, who had almost despaired of ever again seeing prosperous days, sold a largely increased output at prices 30c. above the ordinary.

This continued till well into the fall, in spite of the weakness of the iron trade and other industries. Then it was found that the consumers had an overstock of coal, the big shipments to the lakes were cut off at about this same time, while an effort to curtail mining failed. The car shortage, which had controlled the output all summer also disappeared and it became impossible to sell anything like the amount handled during the summer.

Still it would be impossible to cut out all the profits of the summer if nothing at all had been done in December, as coal was still sold at a profit, though a small one. Operators who had not made many contracts were highly pleased to be able to accept the high prices, which were sometimes more than 30c. a ton above the ordinary; mines under contract were pushed to meet their obligations.

When the reaction set in there was a complete reversion to former conditions. As soon as the mines had a surplus to dispose of they sent out their salesmen and called on the jobbers to come to their assistance. The word "demurrage," which had for some months been unknown to the trade, was again a grim specter from which there was no escape, for the mines were not flexible enough to curtail their output promptly, as they should do every fall when the lakes are about to close, no matter what other conditions may be. During December there was much unsold coal on track.

Natural gas is coming rapidly into more general use; this alone about absorbs the natural increase in demand for heat and power and is much more a competitor of coal than Niagara Falls hydroelectric power, though the rates on this latter have been materially reduced during the year by order of the Public Service Commission. Some coal shippers are so careful in looking after what they consider their rights in this field that they voted against the amendment to the state constitution last fall, which proposes to develop water power over the state for general use.

It should be said in closing that figures showing the amount of coal received in Buffalo are not obtainable. Some of the rail shipping interests keep them for the purpose, chiefly of allotting cars to the mines in time of shortage, but they steadily refuse to make them public. A rough estimate of the receipts makes the anthracite 6,000,000 tons, of which all but about 400,000 tons is shipped out again and the bituminous receipts 7,500,000 tons, of which half to two-thirds is reshipped.

The Ohio Coal Markets and Progress in Mining during 1913

BY J. W. LEHMAN*

SYNOPSIS—Ohio production for 1913 showed an increase of about 10 per cent., making a total of 38 million tons. General softness prevailed in the markets during the early part of the period. Situation firmed up at the beginning of the lake season and gradually improved till near the end of the year. Lake business the largest on record. Labor conditions favorable throughout the period.

The year 1913 was a good one in every department of the coal industry in the Buckeye State. Records so far compiled show the production to be greater than in any former year and prices on the whole have been better. Taking it all in all, the year has been satisfactory to producer, shipper and retailer alike, although there was a general slowness at the close which had a depressing effect.

PRODUCTION IN THE VARIOUS FIELDS

It will be several months before complete records of the production in 1913 are available, but estimates have been made by attachés of the office of the state mine inspector and others showing a large tonnage in most fields. At any rate every field held its own with the possible exception of some of the smaller districts, while many of the larger ones will show a substantial increase over the previous year. The total production in 1912 was 34,450,104 tons, which was a record breaker up to that time. It is believed the output in 1913 will be at least 10 per cent. more or possibly 38,000,000 tons.

The eastern Ohio district will show up the largest increase over the figures of the previous year. In that section, which includes Belmont, Jefferson and Harrison Counties, a number of new mines were opened and the equipment in others was increased. Thus the production of 9,316,000 tons in Belmont County last year will undoubtedly be advanced to more than 10 million tons and the other counties in the district will show like increases. There was also a good advance in the production in Guernsey County, known as the Cambridge district. Last year that county produced 4,333,966 tons and the total this year will be more than 5,000,000 tons.

In the Hocking Valley the output has been satisfactory for the greater part of the year, but the gain in this district will not be as much as in some other sections. This is accounted for by the abandonment of a number of operations which have been about worked out and the dearth of new mines to make up the loss. The tonnage of 4,886,476 in Athens County will likely be increased to a certain extent, but other counties are not expected to show any gain. The Pomeroy Bend field has been quite prosperous and the tonnage will be equal to if not more than that of the previous year. The production in Meigs County in 1912 was 635,640 tons. Some development work was done during the year in Pomeroy Bend fields principally in electrifying several mines.

The Jackson field is holding up well but there is not much hope for increased production because of the fact

that many of the mines are completely worked out. The output in 1912 was 783,334 tons, and it is doubtful if that amount will be reached this year. In the Tuscarawas and Massillon fields there has been fairly active operation during the greater part of the year. The same is true of the Coshocton district, where the output was fair but not as large as in some former years.

PRICES AND THE CAR SUPPLY

The price situation was fairly good throughout the year. In December, 1911, prices for domestic lump in the Hocking Valley district ranged around \$2, but softness followed early in January, and the circular was reduced to \$1.50. It remained at that figure during the spring and early summer when the lake season opened and then July 1, a circular advancing domestic lump to \$1.60 was issued, followed by another Aug. 1, to \$1.70, and \$1.75 was reached by Sept. 1. Finally on Oct. 20 the price was raised to \$2, where it remained during the balance of the year.

Other grades of coal generally followed the fluctuations of domestic lump. The various mining districts advanced the prices about the same time as the Hocking Valley. Pomeroy Bend quotations for lump were generally 15c. to 25c. more than those in the Hocking Valley. In eastern Ohio prices also increased, 3/4-in. selling around \$1.75. Fine coal throughout the year was in good demand and prices ranged high.

The car situation toward the latter part of the summer had the effect of strengthening the market. There was an acute shortage of equipment and deliveries were much delayed as a result. But later on with the coming of mild weather cars became more plentiful and at the close of the year the supply was adequate for all needs.

THE LAKE TRADE

The lake season was one of the most prosperous, if not the best, in the history of the Buckeye State. The tonnage of Ohio coals shipped to the Northwest via the lakes was large. The demand for fuel from that section was active during the entire year and lake shippers and dockmen made every effort to get a large tonnage shipped. Little congestion interfered with lake shipments. Vessels were generally plentifully and were kept in service until the close of navigation.

The records of the Toledo docks of the Hocking Valley R.R. show a large increase over last year. The tonnage loaded by the Toledo docks was not all produced in Ohio and thus is not a true index of Ohio business. By districts the tonnage shows an increase in most cases over the records of 1912, as follows:

The Hocking Valley district shipped 750,689 tons in 1913 and 634,260 tons in 1912; the K. & M. district shipped 709,939 tons in 1913 and 590,944 tons in 1912; the C. & O. district shipped 1,010,841 tons in 1913 and 986,092 tons in 1912. The N. & W. district shipped 104,362 tons in 1913 and 72,398 tons in 1912. Reports from other scattering districts show that the Toledo docks

*60 Ruggery Bldg., Columbus, Ohio.

loaded 2,613,819 tons in 1913, as compared with 2,288,419 tons in 1912.

A great calamity of the year was the storm on the lakes in October. It was one of the worst in the history of lake traffic, and since it occurred before the close of navigation all boats were in service. Half a dozen of the large freighters besides many smaller craft and a large number of lives were lost. This caused a great decrease in the lake business as many boats were put out of commission. Shipbuilders along the lakes have received orders for four large 10,000-ton freighters to take the place of vessels destroyed in the storm.

One of the bad features of the past year was the disastrous floods which swept Ohio from east to west late in March. All of the rivers of the state were overflowed and untold damage was done. The flood was the worst in the western part of the state, but some sections in the east, especially those along the Muskingum River were affected. A number of mines in the Pomeroy Bend district were closed down because of flooding and several in the Hocking Valley were put out of commission.

One of the results of the flood was the demoralization of railroad traffic in every part of the state. This caused a shutdown of most of the mines as the railroads were slow in getting communications established. The net result, outside of damage to mines and retailers, was a serious curtailment in the production.

Eastern Ohio did not fall behind in the lake trade, and the unofficial reports from the large operators show that the tonnage shipped in this business was from 25 to 40 per cent. more than the previous year. The bulk of this tonnage was shipped from Cleveland and Lorain, while some found its way to other lake ports. Dock prices throughout the year were satisfactory and held up well.

LABOR TROUBLES

Steps were taken during the year to enact legislation which was adverse to the interests of operators in the state. At the session of the Ohio general assembly the

Green antiscreen bill was introduced and passed by the senate. Before it reached a final vote in the house of representatives it was sidetracked by the appointment of a commission of five to investigate the method of paying for coal mined. This commission was headed by Judge Crow, of Kenton, and contained several members of the United Mine Workers of America.

After taking evidence from both sides on the controversy and visiting all of the coal fields of the state the commission recommended the passage of five laws which would provide paying for coal mined on the mine-run basis with provisions protecting the operators in most cases. This report will be taken up by the Ohio legislature. It is not assured that a mine-run law will be passed but the indications point that way.

During the year labor troubles were generally scarce. In a few cases several mines were closed down temporarily, but the net result was not noticeable. One of the important incidents along that line was the settlement of the trouble at the Trimble mine of the Hisylvania Coal Co., at Glouster, which had been in progress for about six months.

Preparations are being made for the usual biyearly controversy with miners over the renewal of the wage scale. The present scale expires Apr. 1, and it is believed that the miners will submit new demands asking for an increase. Operators are not disposed to advance the mining rate at this time.

There was some litigation started during the year to separate coal companies from railroad management and several important decisions were rendered. Toward the latter part of the year steps were taken to secure a more equitable freight rate for Ohio producers from the Hocking Valley to Toledo, or other lake ports.

Negotiations were in progress about the middle of the year for the merger of the Lorain Coal & Dock Co. and the Youghiogheny & Ohio Coal Co., but after some bargaining the deal was called off. Both properties are located in the eastern Ohio district.

* * *

Hampton Roads Market Strong and Has a Record-Breaking Year

BY J. W. BUNTING*

SYNOPSIS—Hampton Roads market shares in the general prosperity in the coal industry. Car shortage and labor troubles complicate the situation at various times. Coastwise movement heavy. New dumping records established, the total crossing the million-ton mark several months during the year. British invasion of the New River district.

* * *

The year 1913 has been one of the most trying to the coal shippers from Hampton Roads ports, although it has at the same time been one of the most profitable.

During the first few months of the year there was considerable difficulty experienced in getting coal forward from the mines and a number of shippers were forced to pay demurrage on vessels held up waiting for coal. Shippers were hardly over this trouble before some of the

mines were idle because of the strike. This, however, lasted only a short time and effected but few of the New River operations.

The demand for coal has been good practically all the year. During the summer and fall there was a scarcity at all piers and this, of course, kept prices up. The largest shippers had great difficulty getting coal to take care of contract tonnage. The railroads attributed the shortage at tidewater during the fall to the fact that a large number of cars which had been sent West with coal for lake shipment had been tied up in the congestion on the Western roads and that great difficulty was experienced in getting them back to the mines. Car troubles during the early fall and winter are one of the greatest difficulties which the shippers at tidewater have to contend with, and this seems to be a yearly occurrence.

With the demand steady prices have also remained good particularly on run-of-mine coal. Prices for the entire

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year have been on an average of from about \$2.85@3 for cargo coal. Bunker rates for the year have been \$3.30, and \$3.15 for foreign steamers and \$3.15 and \$3.05 for American owned or operated vessels.

Export shipments were heavy with cargoes moving to several new ports to which American coal has previously been unknown. Outside of the coastwise movement which was largest to Providence and Boston, the Canal Zone will rank perhaps as the best market to which coal has moved from Hampton Roads. Of course, this has been for use on the canal work and when this is completed the demand for coal from this source will be reduced, even should coaling stations be established in that section.

NEW DUMPING RECORDS AND IMPROVEMENTS

Records for heavy dumpings have been made at all Hampton Roads piers during some month of the year, the best record made by the Virginian Ry. was at Sewalls Point when it dumped during the month of November a total of 340,769 tons. This fell behind the Norfolk & Western dumpings for that month by only about five thousand tons. The Norfolk & Western Ry., of course, has always led in the monthly tonnage, but for the month of November it experienced a car shortage, which considerably handicapped it; otherwise the Virginian Ry. could not run it so close a race. Several times during the year the monthly movement amounted to over a million tons; in August, when a light movement is naturally expected, the total dumpings amounted to 1,030,434 tons.

Work on the new steel piers of the Chesapeake & Ohio Ry. at Newport News and the Norfolk & Western at Lamber's Point has been progressing all year, and both these piers will be put in operation early in 1914. The Norfolk & Western Ry. has already given its machinery,

cars, etc., a test and found everything working satisfactorily. It is only waiting now for some of the minor work to be finished when it will start dumping. It will probably be some months before the Chesapeake & Ohio pier is ready for operation. With these two new piers working, facilities at Hampton Roads will be greatly increased and 1914 should see some further records made by the railroads with terminals at tidewater.

On account of the mild fall and winter the demand for coal for domestic use was comparatively light and retailers are complaining of a generally dull year. Prices for anthracite coal have averaged about \$7.75, splint, \$5.50@5.75, with Pocahontas and New River steam run-of-mine in small quantities at \$4@4.50 per ton.

Considerable uneasiness has been felt by some of the smaller selling agencies at tidewater on account of a report to the effect that practically the entire New River coal field had been sold to a British syndicate. The owners of the largest interests have emphatically denied these rumors and stated that while some small operations may have been sold, that the \$50,000,000 reported to have been paid for the mines, would not purchase the number mentioned as having been included in the deal.

A new enterprise put into operation in connection with the handling of coal from Hampton Roads is the storage plant recently completed at Sewalls Point. This is expected to take care of over 200,000 tons and should the occasion demand, it could be enlarged with little cost to take care of over half a million tons, with practically the same machinery now in operation there.

While there has been considerable improvement made during the year in the facilities for handling coal, 1913 has gained little credit in the matter of tonnage with these improvements, and it remains for the coming year to show whether the dumpings over the new piers will be increased in proportion to the increased facilities.

The Chicago Market and Trade Conditions in 1913

BY HERBERT WATERS

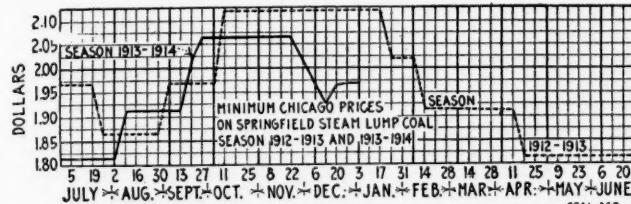
SYNOPSIS—After passing through a year fraught with many vicissitudes, Chicago coal dealers are looking forward to a greater prosperity in 1914. Few regrets were heard with the passing of the old year; it was a period of erratic prices, and while there were a number of bright spots, the 12 months were not satisfactory. Many features entered into this situation, the most important, perhaps, being unfavorable weather conditions. Prices would be advanced one week only to take a downward course the week succeeding.

The year opened with the Chicago domestic market technically in the weakest position it had occupied for several months. Coal of almost every variety was on track without immediate buyers. Soft weather was one of the chief factors in the situation. Anthracite was in good demand, but the strength of that fuel comprised the entire virility of the market. Springfield domestic lump was selling at \$2.32, Franklin County egg at \$2.55@2.80, and Clinton screenings from \$1.57@1.62.

During the week ending Jan. 11 there was a sharp drop in temperature, which had a beneficial effect upon the market. An abundant supply of coal among dealers, however, prevented the price list from moving upward. Warmer weather soon followed and dealers again complained. Scarcely a branch of the domestic fuel trade escaped the depressing influences. Coke was saved from a bad break because some of the ovens diverted a part of their productive capacity to the making of furnace and foundry coke instead of the crushed variety. In many branches of the coal trade there were cancellations of orders and reductions in prices. Toward the end of the month there was weakness in domestic coal and the demand for steam fuel was far from heavy.

With the advent of February there was a sharp curtailment in production owing to the unfavorable market. Many of the mines in Illinois and Indiana closed down two or three days a week. The price list at this time placed Franklin County domestic lump at from \$2.45@2.55, Springfield steam lump at \$2.02, Clinton mine-run

at \$1.97, and Franklin County screenings at from \$1.90@2.05. Smokeless lump and egg was quoted at from \$3.55@3.80. Even anthracite coal went begging. Toward the middle of the month colder weather stimulated buying sufficiently to absorb accumulations of unsold coal as well as regular shipments from the mines. A marked reaction soon followed, however, and the market became demoralized on account of warmer weather and unusually heavy shipments. It was a period of easy prices. Springfield coal was cut 15c. a ton and a similar drop occurred in the Indiana varieties. There was a decline in the price of Hocking Valley coal of 25c. a ton.



At the beginning of March the market was as low as it customarily is in June or July. Some operators sold coal at a loss in order to dispose of it. A slight improvement in conditions soon followed, but it was only temporary. Toward the end of the month the floods in Ohio and Indiana tied up mines and transportation with the result that the market for Western coal was tightened.

Prevailing prices at this period were:

Harrisburg quotations were: Domestic lump and egg, \$2.40; steam lump, \$2.45; mine-run, \$2.20; screenings, \$1.90@1.95; No. 1 nut, \$2.40; No. 2 nut, \$2.40; No. 3 nut, \$2.30.

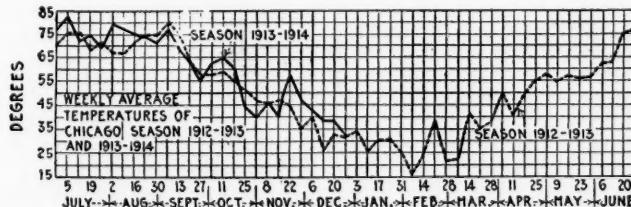
Carterville prices were: Lump and egg, \$2.40; No. 1 washed, \$2.55; No. 2 washed, \$2.35.

Coke—Connellsville and Wise County, \$6@6.25; byproduct, egg, stove and nut, \$4.45; gas house, \$4.75@4.85.

| | Springfield | Franklin Co. | Clinton | W.Va. |
|--------------------|-------------|--------------|---------|--------|
| Domestic Lump..... | \$2.07 | \$2.40 | \$2.27 | |
| Steam Lump..... | 1.92@1.97 | | 2.17 | |
| Egg..... | | 2.40 | | \$3.95 |
| Mine Run..... | 1.87@1.92 | 2.20@2.30 | 1.97 | 3.90 |
| Screenings..... | 1.57@1.62 | 1.90@1.95 | 1.67 | |

SECOND QUARTER

The effect of the disastrous floods in Ohio and Indiana became more noticeable at the beginning of April through a reduction in the supply of coal and an advance in prices.



Screenings were boosted 10c. a ton. The buying of steam coal at good prices became active soon after with the domestic business unsatisfactory. Activity in contracting developed, buyers showing a strong tendency to strike sharp bargains. At the opening of May contract prices were variable, but the general tone of the market was strong. Early in June a shortage of Eastern coal on contracts caused a stronger demand for the Western product.

Prevailing prices at this time were:

| | Springfield | Franklin Co. | Clinton | W.Va. |
|--------------------|-------------|--------------|-----------|-------------|
| Domestic lump..... | \$1.97@2.07 | \$2.55 | \$2.27 | |
| Steam lump..... | 1.82@1.87 | | 2.07 | |
| Egg..... | | 2.55 | | \$3.94@4.30 |
| Mine-run..... | 1.77@1.82 | 2.20@2.30 | 1.87 | 3.30 |
| Screenings..... | 1.62@1.67 | 1.90@1.95 | 1.62@1.67 | |

Harrisburg quotations were: Domestic lump and egg, \$2.40; steam lump, \$2.30@2.38; mine-run, \$2.20@2.25; screenings, \$1.90@1.95; No. 1 nut, \$2.40; No. 2 nut, \$2.40; No. 3 nut, \$2.30.

Carterville prices were: Lump and egg, \$2.30@2.45; No. 1 washed, \$2.45@2.70; No. 2 washed, \$2.30@2.40.

Coke—Connellsville and Wise County, \$5.25@5.50; byproduct egg and stove, \$4.85; byproduct nut, \$4.75@4.85; gas house, \$4.50@4.60.

THIRD QUARTER

An improvement in the demand for anthracite was noticeable early in July. Domestic call for Western coals, however, was light. Throughout the week ending July 12 the spot market on coal was dull and the steam trade erratic. At this time retail dealers found themselves unable to compete with farmers for labor and were obliged to resort to their own efforts in unloading coal or go without.

The price of almost every kind of domestic coal advanced. Smokeless was selling at a premium of 15c. a ton over the circular, and eastern Kentucky coal was increased to 10@13c. ton. As the end of the month drew near the Chicago steam trade reported better buying as did retail dealers in outlying districts. A wide spread of prices and conditions prevailed.

At the beginning of August, Springfield domestic lump was quoted at \$2.07, while that from Franklin County commanded \$2.45@2.65. Clinton steam lump was selling at \$2.07. The price for Springfield mine-run ranged between \$1.82@1.92. Screenings prices were \$1.52@1.57 for Springfield, \$1.85@1.90 for Franklin County, and \$1.52@1.57 for Clinton.

A slow improvement in domestic coal was noted during the opening week of September. Producers asked better prices because the market and the time of year warranted it. Fine coal was under steady pressure. Toward the middle of the month there was greater demand for lump with production below normal. The amount of coal in the hands of retailers was far less than is customary even in the middle of summer.

Within the week ended Sept. 20 there was a perceptible picking up in domestic orders from country districts. The screenings market held reasonably firm, due to a growing belief among operators that they were selling their coal too cheap. Some producers advanced prices for domestic sizes as much as 25c. a ton. At about this time the appointment of receivers for the O'Gara coal properties had a pronounced influence upon the Chicago market. Strife among contending factions tied up various properties and withdrew their productive capacity from the market with the result that the general tone was strengthened.

Prevailing prices at the end of September were:

| | Springfield | Franklin Co. | Clinton | W.Va. |
|--------------------|-------------|--------------|-----------|-------------|
| Domestic lump..... | \$2.57 | \$3.05@3.30 | \$2.25 | |
| Steam lump..... | 2.07 | | 2.07 | |
| Egg..... | | 3.05@3.30 | | \$4.30@4.45 |
| Mine-run..... | 1.97 | 2.30 | 1.87 | 3.45@3.55 |
| Screenings..... | 1.27@1.32 | 1.75@1.80 | 1.22@1.32 | |

Quotations for Harrisburg coal were: Domestic lump and egg, \$3.05; steam lump, \$2.65@2.80; mine run, \$2.30@2.40; screenings, \$1.75@1.80; No. 1 nut, \$1.75@1.80; No. 2 nut, \$2.55@2.80.

Carterville prices were: Lump and egg and No. 1 washed, \$3.05; No. 2 washed, \$2.65.

Coke—Connellsville, \$5.50; Wise County, \$5.25@5.50; byproduct egg, stove and nut, \$4.85; gas house, \$4.65@4.75.

FOURTH QUARTER

The first days of October found the market in better shape than in four years. Starting with anthracite, the strength ran through every grade and size, including

Illinois screenings. Carterville operators, especially, handled a large volume of business. During the week ended Oct. 18 the market continued strong and prices held steady at the top notch. Transportation difficulties were one cause for a stiffening in the market. The movement of Hocking coal was limited to the supply of cars. A cold wave reached Chicago during the closing days of October and aided in giving virility to the price list. Western mines were in a better position than those in Eastern territory so far as the car supply was concerned.

Satisfactory conditions prevailed during the early days of the following month. Springfield domestic lump sold at \$2.57 and Franklin County egg at \$3.05@3.30. Clinton mine-run was quoted at \$1.87, and smokeless mine-run at \$3.45@3.55. During the middle of the month the domestic market softened. There was an advance, however, to \$2 a ton at the mines for 1 1/4-in. Hocking lump, due to the demand for this coal and a shortage of cars. At the

end of November the domestic trade was light in all grades of coal. A drop in prices was averted by the action of the railroads in buying heavily for storage purposes.

December was a dull month, owing to mild weather and a continued decline in the manufacturing business. With the closing of factories there was a sharp recession in the steam business, and the anthracite and coke markets were soft.

Prevailing prices at the end of December were:

| | Springfield | Franklin Co. | Clinton | W. Va. |
|--------------------|-------------|--------------|---------|--------|
| Domestic lump..... | \$2.32 | \$2.45@2.80 | \$2.27 | |
| Steam lump..... | 1.97 | | 1.97 | |
| Egg..... | | 2.45@2.80 | | \$4.30 |
| Mine-run..... | 1.87 | 2.30 | 1.87 | 3.45 |
| Screenings..... | 1.42 | 1.75@1.85 | 1.37 | |

Harrisburg prices were: Domestic lump and egg, \$2.55@2.65; steam lump, \$2.25; mine-run, \$2.25; screenings, \$1.75@1.85; No. 1 nut, \$2.55@2.85; No. 2 nut, \$2.55.

Quotations on Carterville were: Lump, egg and No. 1 washed, \$2.55@2.65; No. 2 washed, \$2.55.

Coke—Connelville, \$5.25@5.50; Wise County, \$5@5.25; byproduct egg, stove and nut, \$4.90@5; gas house, \$4.75@4.85.

* * *

Marketing Conditions in the Mississippi Valley in 1913

BY E. J. WALLACE*

SYNOPSIS—The St. Louis market continues the one pessimistic section of the National trade. Year has been a lean one due to mild weather and industrial depression. Financial difficulties were more numerous and the big flood aggravated the situation. Keokuk power dam restricted the market for screenings, while competition with outlying nonunion fields is constantly narrowing the range of Illinois coals.

* * *

The year opened normal; that is, with such prices as netted the operators a fair margin of profit. Screenings were in demand and sold at what is always considered a good price, 55@65c. for Standard and 75@85c. for Carterville. The screened size market was in good condition, Carterville lump and egg bringing \$1.40@1.60, and Standard 2-in. lump about \$1.

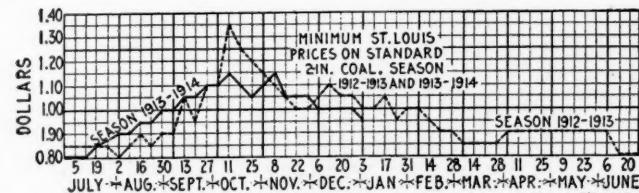
THE BITUMINOUS MARKET IN ST. LOUIS

Warm weather and an extremely mild winter played havoc with business from about the middle of January on. Winter in St. Louis usually begins about Jan. 1, but at no time was there over 2 in. of a snowfall, and while the mercury dropped low enough to make a record, yet it was only for a few days and brought forth no unusual demand.

As the spring months advanced, domestic coal dropped while steam sizes went up and this condition existed well up into the summer months—as late as the middle of August. The year in the coal fields of Illinois has been a disappointment to the most optimistic and a disastrous one to the small operator. About the middle of January mines began shutting down on account of the heavy over-production. The only cause for profitable prices at any period was the car shortage, and when relief came in this direction there was too much coal and the usual cutting of prices resulted. Far-sighted operators figured that they

could keep the mines idle at a lower cost than they could operate and meet competition, and some mines in both the Carterville and Standard fields have not worked since last January.

In April the screenings price went up to around \$1 in all fields, while mine-run sold for 70c. and lump at 75c. from the Standard field. Carterville screenings held at as



high as \$1.05 and lump and egg at \$1@1.10. These conditions lasted until about August, when the scale began to settle the other way, and in October the high price was reached on Standard lump at \$1.40 (2-in. size is quoted all through), the screenings went down to 5c. and some were given away for the freight charges. The high Carterville lump price was \$2.25, as an average, and the screenings price went down to 20c.

In November a change occurred and the screened-size market began dropping until at the end of the year it was below where it had started. The cause of the poor finish of 1913 as a coal year is laid to the mild open winter of 1912-1913, and the first half of the current season. Only for a few weeks in the fall of 1913 was the car shortage serious in the Illinois fields.

During the latter part of the year there has been a gradual shrinkage in the tonnage of screenings for steam in the St. Louis market and extending north along the Mississippi River, caused by the power furnished from the new dam at Keokuk. The use of the power will continue to grow from this time on.

The past year has been an unsatisfactory one for the majority of the operators in southern Illinois. Many

mines are in the hands of receivers and others are carried by banks that keep them up in the hope that the coming spring will bring more hopeful conditions. From the retailers' standpoint, business has been fair—better on Illinois coals than on other fuels.

ANTHRACITE, SMOKELESS AND COKE

The year opened with Pennsylvania anthracite at a premium of about 25c. over the circular, sometimes more. Such coal as did come in was a sorry disappointment to the consumer, for it was off size and carried a vast amount of impurities. In February the demand fell off and the supply became plentiful. In April prospects opened up good and the retailers started a price war that lasted throughout the year, entailing a loss of from \$40,000 to \$60,000 that they would have had if the retail circular had been maintained.

Anthracite lost some ground here in the 1912-1913 season, but the price war brought it back again, and this year saw a record movement at times. On the whole the coal was satisfactory, but occasionally large quantities of poorly prepared independent coal showed up.

The year ends with the market in a deplorable condition, caused by jobbers over buying and coal is selling at more than 50c. below the circular, with no demand.

Smokeless coal was at its zenith the early months of the year, on account of the anthracite shortage. It became a popular fuel even at the high price of \$5@5.50 wholesale, and as high as \$7 retail. While this did not last long, the price kept up well, and there were times during the spring months when smokeless was at a premium. The strike in the smokeless field kept the tonnage down here, and this fuel lost ground. At the end of the year the price for lump and egg was about \$4.75@5.

As with other fuels, so with coke, in the early part of the year. The price on byproduct and gas house was from \$5.50@6. This market broke early and for the entire year in a general way coke has been plentiful and dropped to as low as \$4.50. There has been a persistent effort made during the closing months to keep the price between \$4.75 @5, but the supply exceeds the demand and the price drops.

GENERAL CONDITIONS

In the industries to which the coal trade looks for the movement of a large tonnage, the past year has not been as prosperous a one as 1912. The lumber business was fairly good the first half of the year, but went to pieces in the summer months for various reasons, the chief of which was the tariff issue.

The lead and zinc mining in southeast Missouri, which industry consumes an enormous tonnage of coal, has been above the average the past year, but no new plants went into operation, and for a short period of time the entire district was idle on account of labor troubles. The iron and steel mills in and around St. Louis have not prospered to the extent that they have in other sections of the country.

Some interesting data on the amount of coal coming into St. Louis were made public at the recent hearing before the Interstate Commerce Commission:

| | Tons |
|--|-----------|
| Total coal shipped into St. Louis..... | 6,457,683 |
| Delivered on Terminal rail in St. Louis..... | 1,733,278 |
| Delivered by other roads in St. Louis..... | 2,404,105 |
| Delivered for railroad use only..... | 1,136,733 |
| Delivered for points beyond St. Louis..... | 1,183,621 |

The Terminal Association is paid 20c. a ton, so its earnings on the coal tonnage for the year ending June 30, 1913, were \$1,291,536.

SOUTHERN ILLINOIS

The increasing wage scale in Illinois will continue to bring a decreasing market. Again, there is ever an over-production—some mines go bankrupt, etc., but there are always new ones being developed. Seven or eight mines went out of operation in the Williamson-Franklin County field. No new mines were sunk in Williamson County, but three or four new ones were started in Franklin County. In Saline County the floods in the spring put a few mines out of existence, and seriously affected others. The year started off fairly well, but financial difficulties overcame the big operations.

In the Jackson County Big Muddy mines the year was a disappointment, although the fall and winter months proved good ones and some new producing records were established. Perry County suffered a set back in the destruction of the Paradise mine, and other plants found it more economical to stay idle than operate. The Standard field did not improve this year. No new mines were opened and a few old ones were abandoned. The tonnage will drop heavily in this field.

There were no serious mine disasters during the year in southern Illinois. A few mishaps brought about a smaller number of deaths, it is figured, than usual and injuries will fall below the average.

The year was an aggravating one in labor circles. There were many petty grievances and strikes without number. Different locals lost their charters for failure to obey the State United Mine Workers officials.

Milwaukee Market in 1913

BY HERMAN BLYER*

Coal constitutes the leading commodity in the rapidly-growing lake tonnage at Milwaukee. The annual receipts have increased steadily for the past ten years, and have now reached proportions which warrant that city's aspiration to the distinction of being known as the greatest coal-distributing center of the Middle West.

For the ten years previous to 1903 the total receipts of coal at Milwaukee from all sources averaged a little over 1,600,000 tons annually. Since that period the gain has been remarkable. The year 1912 rolled up a total of 5,172,257 tons, which was the highest figure reached up to that time; but the year just closed established a record far beyond this, the receipts by lake and rail being 5,571,704 tons, or a gain over the year previous of 698,919 tons. The sources of receipt were as follows:

| | Tons. |
|---|------------------|
| By Lake..... | 5,553,357 |
| By Rail..... | 308,785 |
| Total..... | 5,682,142 |
| †Deduct 90 per cent of carferry receipts..... | 290,438 |
| Actual receipts at Milwaukee yards..... | 5,571,704 |
| †Arrivals by carferry figure in the receipts by lake, but only 10 per cent of this coal is delivered in Milwaukee, the greater proportion going direct to the interior. The receipts by carferry during 1913 aggregated 322,708 tons. | |

Soft coal makes up the bulk of the receipts at Milwaukee. The average annual shipments of hard coal during the past ten years has been 925,884 tons. The lowest record during that period was made in 1906, when only 756,-

*Milwaukee Press Club, Milwaukee, Wis.

646 tons of anthracite coal were received. During 1908 and 1911 the receipts of hard coal slightly exceeded the million-ton mark. The year 1913, with a tonnage of 1,220,906, established the highest record at Milwaukee thus far.

The gain in shipments was practically all made during the first six months of the year. At the close of that time the total exceeded that of the same last year by over 850,000 tons, due principally to the suspension in mining during 1912. Favorable rates on grain also attracted carriers to the head of the lakes towards the close of the season, and vessels for coal were hard to get. The backwardness due to this condition was augmented by the disastrous November gale, which swept the Great Lakes and brought the season to a premature close.

Coal moved out to the interior briskly during the spring and summer months, but there was a slowing up in the fall and the season closed with a dull market. As a result all the yards are heavily stocked. The remarkably warm winter thus far has cut down the sales of anthracite coal to a considerable extent, but weather conditions

during February and the spring months following may more than make up for the falling off thus far. The future of the soft-coal market will depend largely upon the rapidity and extent of the industrial revival.

Milwaukee, being a manufacturing city, and having several busy suburbs, is a great consumer of soft coal. One large coke and byproduct plant alone absorbs close to a million tons annually.

The wholesale prices f.o.b. cars at Milwaukee as reported by the Lehigh Valley Coal Sales Co., ranged as follows:

| Months | Wyoming and Cross Creek | | Pocohon- tas Screened | Ken- tucky Cannel. | Steam Coal Screened | | Mine- run Poca- hontas |
|----------------|--------------------------------------|----------|-----------------------------|--------------------------|------------------------|-----------------|---------------------------------|
| | Anthracite Egg, Stove and Nut. | Screened | | | Hock- ing | Pitts- burg. | |
| January..... | \$6.75@7.00 | \$5.50 | \$6.25 | \$3.75 | \$3.75 | \$3.75 | \$3.50 |
| February..... | 6.75@7.00 | 5.50 | 6.25 | 3.75 | 3.75 | 3.75 | 3.50 |
| March..... | 6.75@7.00 | 5.00 | 6.25 | 3.75 | 3.75 | 3.75 | 3.50 |
| April..... | 6.25@6.50 | 4.75 | 6.25 | 3.50 | 3.50 | 3.50 | 3.50 |
| May..... | 6.35@6.60 | 4.75 | 6.25 | 3.50 | 3.50 | 3.50 | 3.50 |
| June..... | 6.45@6.70 | 4.75 | 6.25 | 3.50 | 3.50 | 3.50 | 3.50 |
| July..... | 6.55@6.80 | 4.75 | 6.25 | 3.50 | 3.50 | 3.50 | 3.50 |
| August..... | 6.65@6.90 | 5.25 | 6.25 | 3.50 | 3.50 | 3.50 | 3.50 |
| September..... | 6.75@7.00 | 5.25 | 6.25 | 3.50 | 3.50 | 3.50 | 3.50 |
| October..... | 6.75@7.00 | 5.25 | 6.25 | 3.50 | 3.50 | 3.50 | 3.50 |
| November..... | 6.75@7.00 | 5.25 | 6.75 | 3.50 | 3.50 | 3.50 | 3.50 |
| December.... | 6.75@7.00 | 5.25 | 6.75 | 3.50 | 3.50 | 3.50 | 3.50 |

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The New Anthracite Rules

SYNOPSIS—The following letter has been sent to anthracite mine superintendents by James E. Roderick, chief of the Department of Mines of Pennsylvania. As the suggestions embodied herein are the result of a conference of inspectors, they should represent a consensus of opinion.

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DEPARTMENT OF MINES

Harrisburg, Penn., Dec. 20, 1913.

Mr. _____,

General Manager,

Dear Sir:

You are aware that the Department of Mines through its inspectors has constantly endeavored to reduce accidents in and about the anthracite coal mines, and I am pleased to say that in this work the managers, superintendents and foremen have heartily coöperated; but notwithstanding our united and unremitting efforts, accidents, fatal and otherwise, have occurred with great frequency. Still hopeful, however, that some means might be found by which the lives of the mine workers could be better safeguarded, I called a general meeting of the anthracite inspectors at Wilkes-Barre on Oct. 28 and 29 at which time there was a thorough discussion of the causes of accidents inside and outside the mines. The unanimous opinion was that, to meet the existing conditions, additional safeguards beyond the requirements of the present law must be adopted.

The most prolific causes of accidents inside the mines are falls, cars, blasts, gas, falling into shafts or slopes, suffocation and explosives. During the first 11 months of the present year 510 lives were lost inside the mines as against 463 for the first 11 months of 1912.

If accidents inside the mines are to be reduced, and they should be reduced by one-half, special care and attention must be given to the causes above enumerated. In all mines, but especially in mines where the pitch of the

seam is less than 35 deg., accidents from falls must be given the greatest consideration.

SUGGESTED PRECAUTIONS

I ask you in the interest of the safety of the mine workers to put in practice the following suggestions:

1. TO REDUCE ACCIDENTS BY FALLS.

(a) That in addition to the work of the fire bosses or assistant foremen before the employees enter the mine, as provided by law, you will order that two daily inspections of every working place (except in mines where breasts are being worked full) be made by the mine foreman or an assistant mine foreman, one between 7 a.m. and 12 noon, and one between 1 p.m. and 5 p.m., while the men are or ought to be at work.

(b) That each mine shall be divided into districts of suitable size and each district shall be placed in charge of an assistant mine foreman.

(c) That the mine foreman shall each day enter plainly and sign with ink, in a book provided for that purpose, a brief report stating the general conditions as to safety of the portion of the mine examined by him, describing briefly but clearly any dangerous conditions that may have come under his observation and the methods adopted to remove them.

(d) That each assistant mine foreman shall each day enter plainly and sign with ink, in a book provided for that purpose, a report stating the general conditions as to safety of the working places visited in the portion of the mine allotted to him, describing briefly but clearly any dangerous conditions that may have come under his observation and the methods adopted to remove them.

(e) That the mine foreman shall read carefully the daily report of each assistant mine foreman not later than the following day and shall countersign the report with ink.

(f) That the mine foreman and assistant mine foremen on their daily inspection tours shall see that Gen-

eral Rule 12 is being complied with, and in addition see that props are properly placed and fastened securely at top and bottom, so that they cannot be displaced by flying coal unless broken, but if displaced or broken, they shall be replaced before any other work is done.

(g) That the miners be provided with a sufficient number of sawed cap pieces of suitable length, width and thickness.

(h) That the mine foreman and assistant mine foremen in their daily examinations shall insist that the miner remain at work with his laborer in every place where, in their opinion, danger is to be apprehended from falls of roof or coal, and at all times where pillars are being removed.

2. TO REDUCE ACCIDENTS BY THE CARS.

(a) That all gangways and main haulage roads driven after Jan. 1, 1914, where employees travel and coal is hauled thereon, shall have a clear space of $2\frac{1}{2}$ ft. from the top rail of the car to the rib, and also to the timber, which shall be made and continued throughout on the same side of the passageway, if, in the judgment of the inspector, the conditions will permit; and all such space shall be kept free from obstructions. However, if it is found impracticable by the inspector to provide such spaces, then safety holes of ample dimensions shall be made on the same side, and not more than 100 ft. apart, which shall be kept clear of obstructions and whitewashed.

(b) That the distance between props and top rails of cars used in breasts shall not be less than 2 ft. and said space shall be kept free from obstructions.

(c) That the height of gangways and traveling-ways wherein employees have to travel into and out of the mines, shall not be less than 5 ft. 6 in. from the top of sill to roof.

(d) That no person under the age of 17 years shall be employed as runner or driver in any mine.

(e) That no person except the driver shall ride on the front end of the car, and no person shall ride between cars, and upon the request of the inspector a seat shall be provided for the driver.

(f) That in slopes where persons are lowered or hoisted, special cars shall be provided for that purpose, the cars to be approved by the inspector of the district.

(g) That in gangways where platforms are used, platforms shall not extend over the top rail of the car.

(h) That where chutes are used they shall not extend more than 12 in. over the top rail of the car, unless they are at least 16 in. above the top rail.

(i) That when a breast is finished or abandoned for over 30 days, all chutes and platforms that may extend over the top rail of the car shall be removed.

3. TO REDUCE ACCIDENTS BY BLASTS.

(a) That wherever practicable, all blasts inside the mines shall be exploded by an electric battery.

(b) That all such batteries used shall be approved by the mine foreman, and he shall instruct the miners as to their use, so blasts can be exploded with greater safety.

(c) That only one kind of explosives shall be used in the same hole.

(d) That all shot holes in coal shall be tamped to the mouth.

(e) That a charge of high explosive in coal that has missed fire shall not be withdrawn nor shall the hole be reopened.

4. TO REDUCE ACCIDENTS FROM EXPLOSIONS OF GAS.

(a) That the superintendent shall, as far as practicable, see that the provisions of General Rules 4, 5, 6, 7, 8, 9, 10 and 11 are complied with.

(b) That crossheadings between inlet and outlet airways in each split of air when closed permanently shall be substantially shut with walls of concrete, or of stone or brick laid in cement or lime mortar. Provided, however, that the inspector may give written approval of other suitable material in mines with heavy pitches.

(c) That crossheadings between breasts, except those nearest the face, shall be closed, and a brattice from the last crossheading shall be erected so as to conduct the air to the face. Provided, however, that the closing of such crossheadings and the erection of a brattice may be omitted on the written consent of the inspector.

(d) That each breast when finished shall have a crossheading driven at the face to prevent an accumulation of explosive gas.

(e) That every permanent overcast or undercast built hereafter shall be substantially constructed of incombustible material.

(f) That in each mine there shall be telephone connections between the surface and all important parts of the mine, and an attendant shall be on duty at all times at the telephone on the surface.

5. TO REDUCE ACCIDENTS IN SHAFTS.

(a) That every shaft and also every slope with an angle of over 35 deg., wherein men are lowered and hoisted, shall have safety gates at the top and also at each intermediate lift thereof, which shall be controlled by cage, gunboat or car.

(b) That where men are lowered or hoisted in such shafts or slopes, a safety device that will prevent overwinding and also control the speed of cage, gunboat or cars at all times shall be attached to the engine.

6. TO REDUCE ACCIDENTS BY EXPLOSIVES.

(a) That not more than 5 lb. of high explosive shall be taken into a mine at any one time by any one person, unless more is required for use in that shift.

(b) That high or permissible explosives shall not be sold for use in mines, unless the name of the manufacturer and name and grade of explosives are stamped on each stick.

(c) That detonators shall at all times be kept separate and apart from other explosives until required for use.

(d) That no frozen explosives shall be sold or given to any employee.

(e) That no person shall thaw explosives inside or outside the mines, except by the method recommended by the manufacturer.

(f) That black powder shall not be sold loose in kegs, cases or packages, but shall be sold in cartridges, and shall not be taken into the mine, except in nonconductive receptacles.

(g) That detonators shall be sold in boxes of ten in a box, and not more than one box shall be sold to any one person at one time unless more are necessary for a day's work.

7. TO PREVENT ACCIDENTS FROM ELECTRICITY.

(a) That when electric power is used in and about the mines, it shall be cared for in accordance with Article

XI of the Bituminous Mine Act of June 9, 1911, so far as it can be applied to anthracite mines.

8. GASOLINE AND OIL.

(a) That six months after Jan. 1, 1914, locomotives using coal, gasoline or oil shall not be used inside of any mine, and the use of gasoline or oil for generating power for any other purpose shall also be prohibited.

9. TO REDUCE ACCIDENTS BY CARS ON SURFACE.

(a) That railroad and other cars shall be handled with care.

(b) That safety switches shall be placed above all breakers, so as to safeguard the loaders, and at any other place when requested by the inspector.

10. TO PREVENT ACCIDENTS FROM SUFFOCATION IN CHUTES.

(a) That no person shall shovel coal in any pocket until the loader is notified.

(b) That the loader shall not load from any pocket until he is informed that such person or persons are out of the pocket.

11. RESCUE AND FIRST-AID CORPS SHALL BE ESTABLISHED.

(a) That rescue and first-aid corps shall be established at each colliery or at each group of collieries, as agreed upon between the superintendent and the inspector.

You are kindly requested to order that the suggestions given in this letter be carried out, as it is the sincere desire of the department, and I know it to be your desire also, to make a record for the year 1914 in the way of reducing accidents in the mines.

The Kemmerer District of Wyoming

Of the three large operating companies in this district the Kemmerer Coal Co. has slowly forged into the lead and is now by far the most important factor in the district. As its name signifies, the company is affiliated with the powerful Kemmerer interest in Pennsylvania.

Unlike most coal districts, operations in the Kemmerer field are confined almost entirely to large corporate interests. Three such are represented in this field: The Union Pacific Coal Co., operating the southernmost extension of the workable coal; the Diamond Coal & Coke Co. controlling the central district and the Kemmerer Coal Co. the northern.

The Kemmerer company is producing about 4000 tons per day, and has a monthly payroll of nearly \$90,000; it employs about 1100 men. Development work for the year was confined mostly to their No. 6 mine, although improvements were also made at other of their operations. It is interesting to note that the central-power plant idea is not being neglected in this district. The Kemmerer company is installing a large turbine-driven generator capable of developing 1025 kw., which will be used for pumping at all the mines of the company, some eight or nine miles distant.

The Diamond Coal & Coke Co. operating three mines at Diamondville, Oakley and Glencoe, is the second largest producer in the district. This company is a subsidiary of the Montana copper interests and most of the output is used at the company's mines and smelters at Butte and

Anaconda. The Diamond mines are producing about 2200 tons per day, employ between 600 and 700 men and have an average monthly pay roll of about \$70,000.

With the exhaustion of the Kemmerer coal, operations are being gradually extended into the lignites lying to the west. There are a large number of these seams, some of enormous thickness, but all of rather a low grade.

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Coal and Coke Production in the United States for 1913

The following tables have been compiled largely from data communicated by the several state mine inspectors, estimates having been made only where no such statistics were available, but in all cases upon the basis of reliable information.

PRODUCTION OF COAL IN THE UNITED STATES

| States | 1912 | 1913 |
|-----------------------|-----------------|---------------|
| | Short Tons | Short Tons |
| Alabama..... | 16,513,040 | 17,500,000 |
| Alaska..... | 2,000 | 2,600 |
| Arkansas..... | 2,100,000 | 2,250,000 |
| Colorado..... | 11,016,948 | 9,188,432 |
| Idaho..... | 2,000 | 2,000 |
| Illinois..... | 60,217,019 | 62,000,000 |
| Indiana..... | 15,285,718 | 17,246,000 |
| Iowa..... | 6,820,828 | 7,415,757 |
| Kansas..... | (a) 6,986,182 | 7,400,000 |
| Kentucky..... | (a) 16,490,521 | 18,500,000 |
| Maryland..... | (a) 4,964,038 | 4,800,000 |
| Michigan..... | (a) 1,206,230 | 1,400,000 |
| Missouri..... | 4,229,907 | 4,230,000 |
| Montana..... | 3,048,495 | 3,365,712 |
| New Mexico..... | (a) 3,536,824 | 3,600,000 |
| North Dakota..... | 528,603 | 495,000 |
| Ohio..... | 34,444,291 | 37,500,000 |
| Oklahoma..... | 3,600,000 | 4,000,000 |
| Pennsylvania..... | (a) 161,865,488 | 168,000,000 |
| South Dakota..... | (e) 6,000 | (e) 7,000 |
| Tennessee..... | (a) 6,473,228 | 6,600,000 |
| Texas..... | (a) 2,188,612 | 2,300,000 |
| Utah..... | 3,088,356 | 3,289,255 |
| Virginia..... | (a) 7,846,638 | 8,500,000 |
| Washington..... | 3,346,946 | 3,677,946 |
| West Virginia..... | (a) 66,786,687 | 71,600,000 |
| Wyoming..... | (a) 7,368,124 | (e) 7,100,000 |
| Total bituminous..... | 449,964,723 | 471,969,702 |
| Anthracite..... | | |
| Colorado..... | 69,037 | 51,903 |
| New Mexico..... | 47,892 | (e) 48,000 |
| Pennsylvania..... | 84,361,598 | 90,000,000 |
| Total anthracite..... | 84,478,527 | 90,099,903 |
| Grand total..... | 534,443,250 | 562,069,605 |

PRODUCTION OF COKE IN THE UNITED STATES

| States | 1912 | 1913 |
|--------------------|---------------|---------------|
| | Short Tons | Short Tons |
| Alabama..... | 2,881,861 | 3,500,000 |
| Colorado..... | 972,539 | 889,989 |
| Georgia..... | 43,158 | 45,000 |
| Illinois..... | 1,764,944 | 1,750,000 |
| Indiana..... | 2,600,050 | (e) 2,700,000 |
| Kentucky..... | 196,020 | 225,000 |
| New Mexico..... | (a) 413,906 | (e) 400,000 |
| Ohio..... | (a) 388,669 | 395,000 |
| Oklahoma..... | 26,950,081 | 27,100,000 |
| Pennsylvania..... | 345,602 | 328,000 |
| Tennessee..... | 347,356 | 314,694 |
| Utah..... | 1,009,481 | 1,207,207 |
| Virginia..... | 49,000 | 74,000 |
| Washington..... | (a) 2,465,986 | 4,000,000 |
| West Virginia..... | (d) 2,100,000 | (e) 2,400,000 |
| Total..... | 42,528,653 | 45,328,890 |

(a) Figures of U. S. Geol. Survey. (b) Year ending June 30. (c) Year ending Sept. 30. (d) Includes output of byproduct coke for Massachusetts, Maryland, Minnesota, Michigan, New York and Wisconsin. (e) Estimated.

The chief difference between the expansive use of air and steam is the heat loss in compression and expansion. Starting with an initial pressure of 75 lb. per sq.in. the adiabatic curve for air cuts the atmospheric line at a point where the final volume is 3 1/3 times that of the initial volume. The same curve for steam, on the other hand, cuts the atmospheric line at a point where the volume of the expanded steam is 4 1/2 times the original volume. The mean effective pressure, in the case of the expanding air, is 18.9 lb. per sq.in.; while for steam the value of this pressure reaches 25.2 lb. per sq.in. The low value for air is due to the loss of heat during expansion. For this reason air cannot be used expansively to the same extent as steam.

Editorials

New Year Prospects in the Public-Land States

The best gifts the West received this new year were the recommendations of the Secretary of the Interior in his report to the President. We regard these statements as important as if made by the chief executive himself, for the President has been disposed to let the public learn the greater part of the conclusions of himself and his cabinet through the annual reports of the secretaries of the various departments so that only what he considers of leading importance may appear in his own addresses to Congress.

As the President has so far always had his own way with Congress and obtained the passage of such bills as seemed desirable to him, we look upon the recommendations of the Secretary of the Interior as already on their way to enactment and it is well that they should be.

Let us review the situation in the West from the point of view of an ordinary Westerner, who is not a coal operator. We are not sure we have the approval of the Western mine owner in our attitude toward coming legislation. Nor do we much care so long as we are in accord with what is right and fair. Such a position in respect to any coal-mining interest may be credited only with difficulty to the technical press, but we have never been disposed to put purely private interests before those of the nation.

| PRODUCTION OF PUBLIC-LAND STATES, 1906-1912 | | | |
|---|------------|--------------|---------------|
| | Tonnage | Value | Price per Ton |
| 1906 | 25,510,997 | \$35,711,944 | \$1.40 |
| 1907 | 27,767,599 | 44,040,332 | 1.58 |
| 1908 | 24,819,029 | 46,254,515 | 1.62 |
| 1909 | 28,896,787 | 46,767,383 | 1.62 |
| 1910 | 32,849,009 | 53,809,745 | 1.64 |
| 1911 | 29,675,510 | 48,404,247 | 1.63 |
| 1912 | 31,863,762 | 52,587,127 | 1.65 |

The table above shows that the production of coal in the public-land states has increased 25 per cent. in the six years between 1906 and 1912. The bituminous output in all the other states in the Union has increased in the same time 31 per cent. Thus the old well developed partly depleted states of the East have shown greater rapidity of development than the West with its merely grazed resources. Meanwhile British Columbia in the same period of six years increased its production 59 per cent.

Looking at the table we realize the truth of the remark by the statistician of the Geological Survey, E. W. Parker, at the American Mining Congress. He said:

"I desire to call attention to the conditions in the public-land states which are also coal producers. All of them showed favorable comparisons with other states" in earnings on capital.

To relieve the conditions which we have pointed out, Franklin K. Lane, the Secretary of the Interior, suggested in his report that a royalty take the place of a cash payment for lands, and in the case of Alaska that the money earned be thrown into a fund for the development of that territory. There is no reason why this should

not be done for the public-land states as well as for Alaska, the royalty collected being paid over, less the cost of administration, to those states to which the production went.

We are afraid that every little while, unless something is done speedily, there will be a revaluation of Western coal lands. Every time some unwise person pays a foolish price for Connellsburg, Pocahontas or New River coal, we shall publish it. Mr. Ashley has declared that he reads this record of ours and he will doubtless give his prices a new boost every time he notes a rise if he can find a complacent lawyer-secretary like Walter L. Fisher to give his consent. In a letter dated Dec. 26, 1913, George H. Ashley, the chief of the Coal Section of the Land Classification Board admits that three modifications have been made of the classification system since 1907 and we quote him at length, for it would not be fair to pick and choose from among his statements on that particular subject:

Public coal lands are classified and valued according to regulations drafted by the Geological Survey and approved by the Secretary of the Interior. The first regulations were promulgated in 1907 and these have been replaced necessarily by those of 1908, 1909 and 1913. The regulations now in effect were approved by Secretary of Interior Fisher in February, 1913, and are given in full in U. S. G. S. Bulletin 537, a copy of which you doubtless have. From the beginning, the principles underlying this scheme of valuation have remained unchanged. That is, the land is valued according to the quantity, quality and accessibility of the coal it contains, accessibility including both depth beneath the surface and nearness of transportation.

The changes that have been made from time to time have to do with the limits set and have resulted in more refinement of detail. Revaluation of lands is always in progress, sometimes with resulting lower price, but more often, because of new data showing more coal to be present than at first supposed, resulting in an increase of price. No widespread or radical revaluations are made, however, and many if not most of the coal lands upon which values have been placed have never been revalued.

There is, we think, no reason why the West should not have advanced like the South, had the land tenure been the same. While the Western production went up 24 per cent., the Kentucky coal output rose 70 per cent. and that of West Virginia 54 per cent.

We saw how British Columbia has forged ahead under favoring laws, advancing between two and three times as fast as the public-land states. The laws of this province, however, are different, according to Donald McKenzie. There, "whether a man is citizen or alien, he can buy a license for \$100 good for one year. This license can be renewed for a second and third year upon payment of \$100 a year and doing \$50 worth of work every 12 months.

"Upon discovery of coal the licensee can have a lease of land for five years at 15c. per acre per year. This lessee can obtain a renewal of his lease for a further term of three years on payment of \$100 in addition to 15c. per acre and there is no royalty to be paid for the coal mined. During the term of the lease or within three months thereafter, if the lessee has expended \$50 on each 640-acre tract in mining and development work he may pur-

chase the tract for \$20 per acre cash and secure his title in fee simple.

"Thus a prospector may secure 640 acres of lands and hold them for three years under a license and prospect them upon the payment of \$100 per year and then may procure a lease of the tract for a total of eight years at 15c. per acre, making 11 years before purchase and payment is required.

"During this period any number, not exceeding ten, of the licensees and lessees can combine their locations with locations adjoining, making a total of 6400 acres and may do all their development and annual work upon one claim and at one or more points in the whole tract."

Much of this system of parting with public domain may be open to question but such liberality side by side with the close-fisted narrowness of our land system has shut like a trap on the progress of the public-land states.

But within a year, we trust the restrictions will be removed and the West, released from its financial tyranny, will show a new lease of life, the cause of which perhaps even the citizens of the West may not themselves realize.

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Mining Education

The educator is a charming personality swayed rather by the fascination of his studies than by their value to the world at large and as year by year certain subjects receive new interest, the rage to impart them upsets the balance of the educator and he would fain teach them whether they are needed or not.

Years ago, the farmer needed training in agriculture but if we gave him an education, we made him a theologian, a doctor or a soldier, and agriculture which needed entomologists, botanists, agrologists, pomologists or veterinarians was defrauded of her rights.

No one ever questioned whether there was a market for the type of brain culture which was being created, whether the students when graduated were headed where they were needed or to some place already overcrowded. No one even condemned the teachers and parents who coined too many intellects of one character but rather censured the world for refusing to find place for those who had been cultured at so much expense.

And it is so today. The coal companies have at each of their mines place for one or two mine foremen and a few firebosses but some are at much expense, training a great number of men for those few positions. They are creating applicants for jobs, encouraging them to hope they may get them and then they are necessarily disappointing them when the goal seems attained.

But some of the men who qualify will ultimately get the positions they seek and they will then usually get less salary than a hard-working miner can make and so they will not feel that what they have learned at the expense of much evening labor has been adequately rewarded. Thus the generous and enlightened actions of the most advanced coal-mine managers will be largely defeated.

All of which does not condemn education nor declare it of no value, nor advise its denial to the workingman nor mean that he shall never aspire to the highest of places. And what is a workman? It appears to us that he is a man who does his own work and does not merely supervise the labors of others and in a degree, of course,

all are workingmen. Among such men are artists, sculptors, writers, educators and surely their work is worth doing well. The workman of whatever kind does not necessarily condemn himself to an insignificant place because he does not seek, at least primarily, to be a boss and control the labors of others.

Certainly there is a place for men who can do their work with consummate skill. The world is full of jobs needing from the workmen the highest of ability. As a matter of fact our motormen today are the poorest possible electrical experts; our mule drivers know little about the needs of the animals they drive; our coal diggers are often merest butchers of coal and the machinemen understand but little of what is needed for the care of their machines and as for our chauffeurs on gasoline locomotives, their ignorance of the motors they run is usually colossal.

We have been so accustomed to these conditions, that they appear normal but if every man were expert and went about his work, whether tracklaying, mining coal or hauling it, with the utmost skill, the product and quality of the work of his hands would immensely increase.

If you have 500 miners, 10 motormen, 20 mule drivers and 15 timber men in your mine, have you prepared to bring out of them an efficiency which will pay them and reward you and make their work a science and a pleasure? Instead, are you not trying to teach them that the height of ambition is to handle a pencil and rule one's fellow man?

It is better indeed to arrange a program of general education than one which will serve only the elect. Colleges are good, but public schools are better, and the coal companies will do well to lay out broadly before their employees the elements of good living and the best methods of performing their duties.

Time was when this was a better country than today with forests uncut, mineral resources untouched, waters unpolluted, and few people to support. Yet the Indian people, who found in that ideal country their abode, starved and shivered in the cold and their misfortunes were so numerous that the population did not increase. Today with a less fortunate country but with a more efficient people, the population is well fed and well housed and their numbers continually increase. The reason is in efficiency. No one can deny that efficient labor is the greatest physical need of the working man and will pay him the most liberal returns.

Let every operator so educate his employees and their families that they can have that efficiency which will make for their well being and will promote their contentment. For there is little pleasure in seeking for jobs which cannot be attained and which even if once possessed, are seen to be far from desirable. And pleasure there *always* is in doing a work of any kind as well as it can be done and giving our service not to the overseer but to the task in which we are engaged.

Training for mine foreman has its proper place, much of it serves as a basis for any kind of mining work and all of it is useful as mental gymnastics which we all need. Such training does, however, urge that there is but one rightful ambition that is to be a foreman having a position of authority and it is, therefore, apt to be unsettling in its effect on mining men in general, if it is the only education which colliery schools afford.

Legal Department

When Does a Labor Union Become an Unlawful Combination?

By A. L. H. STREET*

SYNOPSIS—*A combination formed by members of a labor union which has the effect of limiting free combination in the production of coal in interstate commerce, is as much violative of the federal anti-trust law as a similar combination between mine operators. Action taken by a union interfering with contracts of employment, are also unlawful and actionable.*

Any organized attempt by the members of a labor union, through the means of a boycott, to prevent a coal operator from mining coal intended for transportation beyond the state, or to interfere with traffic in the coal after its delivery in another state, or to prevent persons from negotiating with the operator for the purchase of such fuel in interstate commerce, constitutes a violation of the Sherman law. This conclusion necessarily follows from the recent decision of the United States Circuit Court of Appeals in the Danbury Hatters' case, which latter decision conforms to the judgment of the federal supreme court rendered Feb. 3, 1908, on a former appeal.

The holding in the Hatters' case is that a combination between members of a labor organization to destroy an existing interstate traffic in hats by preventing the manufacturers, by means of a boycott, from manufacturing hats intended for transportation beyond the state, and to prevent the manufacturers' retail customers in other states from further negotiating for the purchase of such hats in interstate commerce, constitutes an unlawful combination within the prohibition of the federal anti-trust act, entitling the complaining manufacturers to recover treble damages for the injury sustained by them in consequence of the combination, even though a small amount of interstate business may be involved.

PROHIBITS ANY COMBINATION THAT OBSTRUCTS COMMERCE BETWEEN STATES

The Supreme Court said that its "conclusion rests on many judgments of this court, to the effect that the act prohibits any combination whatever to secure action which essentially obstructs the free flow of commerce between the states, or restricts in that regard the liberty of a trader to engage in business." (28 Supreme Court Reporter 303.) The cited opinion, also, contains this quotation of Justice Brewer in the case wherein the American Railway Union was enjoined from combining to enforce a boycott by railroads against Pullman cars: "If a state, with its recognized powers of sovereignty, is impotent to obstruct interstate commerce, can it be that any mere voluntary association of individuals within the limits of that state has a power which the state itself does not possess?"

That labor unions are amenable to the anti-trust law

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says the Circuit Court of Appeals, "is no longer debatable. The law makes no distinction between the classes, employers or employees, corporations or individuals. Rich and poor alike are included in its terms. The Supreme Court particularly points out that, although Congress was frequently importuned to exempt farmers' organizations and labor unions from its provisions, these efforts all failed and the act still remains." The statute looks solely to competition and to the giving of competition full play by making illegal any effort at restriction upon competition. (25 Supreme Court Reporter 276.) It is injury to the public that characterizes interruption of trade as illegal. (Tennessee Supreme Court, 52 Southwestern Reporter 853.)

APPLICATION OF PRINCIPLES TO COAL INDUSTRY

Concrete application of these principles to the coal industry is illustrated by the decisions reached by the United States District Court for the Northern District of West Virginia, in the case of *Hitchman Coal & Coke Co. vs. Mitchell*, 202 Federal Reporter 512. These points were decided: In their relations to the general public as consumers of the products of labor and capital, the members of labor unions are governed by the same rules of law as to combinations in restraint of trade as are combinations of capital.

Consideration of a labor union is not to be limited to its relations to its members and to those who employ them. A union of mine workers becomes an unlawful combination in restraint of trade, within the meaning of the Anti-Trust law, when it requires its members to surrender their individual freedom of action, or when it seeks to require mine workers to become members whether they desire to do so or not, or when it attempts to restrict or destroy the right of a mine owner to contract with his employees independently of the union, or when it attempts to exclude his right to employ nonunion men, or to discharge any man he sees fit, if that man is not under contract, or when it assumes the right to shut down a mine at any time by ordering a strike, or when it tends to create a monopoly in mine labor, or when it combines with rival operators to restrain the trade of a mine owner operating in another state.

Independently of consideration of the Anti-Trust act, the same court holds that it is an actionable wrong for a labor union to induce its members to break existing contracts with their employers, or to interfere by intimidation or coercion with the inherent right of the employer to control his property and conduct his business in any lawful manner he may choose, and that, although they have the lawful right to advise their members to strike, *unless that amounts to a violation of a contract*, and by reasoning or persuasion to prevent others from taking their places, neither a union nor its members may lawfully prevent other workers from taking, or remaining in employment, by intimidation or coercion.

The judicial opinions here reviewed reflect the present attitude of most of the appellate courts of the country.

Briquetting in North America

BY C. T. MALCOLMSON*

SCYNOPSIS—More than 40 briquetting plants have been built, but at present only 14 are in operation. Various causes, chief among which is the fact that the difference in price between fine and coarse coal is not sufficient to cover the cost of briquette manufacture, are responsible for this state of affairs.

¶

The history of coal briquetting in the United States is in marked contrast to that of most of our other industries. More than 40 plants have been built, but at the present time only 14 are in operation. There have been various causes for the suspension of some of these plants, the principal one being the fact that in the present condition of the coal market, the difference in price between the fine and lump coal, which was formerly sufficient to cover the briquetting charge and show a profit, has now ceased to exist. Other plants have been designed without practical knowledge of the progress of the art or a realization of what is necessary to make merchantable briquettes.

The largest and most complete coal-briquetting plant in this country is that of the Berwind Fuel Co., at Superior, Wis. This plant started operations in February, 1912. Changes in the design occupied a large part of that season, so that the plant was not placed on a commercial basis until September, 1912. The buildings were designed for the installation of two Rutledge presses; the second press, with the necessary mixing, feeding and drying equipment, was installed during the summer of 1913, which brought the plant up to its full capacity of 80 tons per hour.

During 1913 the plant of the Standard Briquette Fuel Co., at Kansas City, Mo., was completely rebuilt and its capacity increased from 10 to 30 tons per hour. These plants represent the latest development in the briquetting of bituminous coal by the use of American presses, which have been perfected to meet the commercial conditions in this country.

At first, coal briquetting developed more rapidly on the Pacific Coast than elsewhere, owing to the favorable trade conditions which obtained there 10 years ago. At the present time, however, only two plants are operating there; one built by the United Collieries Co., at Seattle, Wash., contains a Belgian or roll type of press, with a capacity of ten tons per hour; and the other built by the Los Angeles Gas & Electric Corporation, utilizing a modified brick press to produce briquettes out of carbonized residue without a binder, at the rate of approximately 15 tons per hour.

Trade conditions have again shifted so that at the present time the opportunities for coal briquetting on the Coast are very encouraging. The Pacific Coast Coal Co. is now building a plant to manufacture bituminous-coal screenings into briquettes at the rate of 30 tons per hour. The plant is similar in design and construction to that used by the Berwind Fuel Co., although the process has been modified to permit the use of California asphalt as a binder.

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There are three other plants operating in the Middle West. The Stott Briquet Co., Superior, Wis., make briquettes from anthracite screenings with the addition of a small percentage of bituminous coal. This plant has an output of 12 tons per hour. A roll press is used, with liquid pitch as a binder. Two other presses have been developed for the manufacture of bituminous-coal briquettes to meet American requirements. The Ladley press is installed at the plant of the Indianapolis Pressed Fuel Co., Indianapolis, Ind., with a capacity of 12 tons per hour; the Renfrow press is used at the plant of the Detroit Coalette Fuel Co., Detroit, Mich., having an output of approximately 8 tons per hour. In both plants hard pitch is introduced into the coal in dry form. Advances have been sent out that a plant now being built by the Colorado Pressed Fuel Co., Denver, Colo., will be in operation this year; but so far no commercial briquettes have been manufactured.

The development of the industry in the Eastern States has been marked by the installation of two plants in the anthracite field. The Scranton Anthracite Briquette Co., Dickson City, Penn., employs an improved Belgian type of press having a capacity between 40 and 50 tons per hour. Coal-tar pitch is used as a binder; it is manufactured at the plant and introduced into the coal in liquid form.

The plant of the Lehigh Coal & Navigation Co., at Lansford, Penn., contains two Belgian-type presses with a total capacity of 10 tons per hour, manufacturing briquettes out of anthracite dust and coal-tar pitch by the drp process. Machines of similar design and capacity are installed in the Coal Boulet Co.'s plant, New York City, and the American Coal Boulet Co.'s plant at Phoenix Mines, Maryland.

The plants of the Eggette Coal Co., of Trenton, N. J., and the Virginia Coal Briquetting Co., of Richmond, Va., contain presses of similar design to that installed in the Stott plant and have approximately the same capacity. These two plants, however, use patented binders in the manufacture of their briquettes, in which starch is the main binding constituent.

The plant at Bankhead, Canada, built in 1906, is one of the pioneers in the industry on this continent. This plant now contains two roll presses of a modified Belgian type with a maximum capacity of 30 tons per hour. It operates 20 hours per day during part of the year and has made over 500,000 tons of briquettes. During 1912, 101,175 tons were produced.

The Colonial Coal Co., of Sidney, N. S., has two plants in operation, containing three Belgian presses with a combined rated capacity of 30 tons per hour. The plant at the McKay Colliery, built at North Sidney, N. S., in 1912, has one machine; while at the Bras d'Or Colliery two machines were installed in 1913.

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Those desiring the index of COAL AGE for the second half of 1913 may send in their names at any time. The index will be ready to mail very shortly.

Discussion By Readers

Longwall Mining Methods

Letter No. 1—Having worked under contract, in longwall mining, in seams varying from 3 ft. to 6 ft. 6 in. in thickness, with and without a draw slate above the coal and under both slate and rock roof, I have used many different methods of working, both in the advancing and retreating systems of longwall. Although I have used three rows of chocks and even four rows along the working face, I have found that the best results are obtained by the use of two rows of chocks only, as shown in Fig. 1. Experience has shown that when three or four rows of chocks are used, the roof is held up too long in the goaf, and excessive weight is thus thrown on the coal face; whereas, when only two rows of chocks are used the roof settles uniformly on the packs, which greatly assists the mining of the coal.

I consider it of great importance to set the chocks in such a manner that they can be easily and safely removed. I have found that the following method gives the best results: Place 3 or 4 in. of fine dirt under the front log, which is laid just back of the road and parallel to the face of the coal. Having laid this first log at the front, build up the back with slate or rock sufficient to support the rear ends of the two side logs, the front ends of which rest on top of the front log. Now, build up the chock to the roof in the usual manner. I have shown this method, in a rough way, in the accompanying figure. It is import-

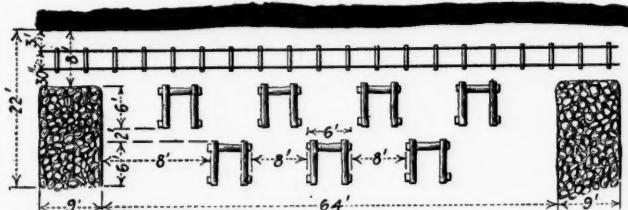


FIG. 1. SHOWING ARRANGEMENT OF CHOCKS AND FACE TRACK IN LONGWALL WORK

ant to keep the front ends of the chocks in line with the front ends of the packs. These packs are made about 3 yd. in width and are extended as often as the face is advanced sufficiently to permit another row of chocks being built, say about 8 ft.

When removing the chocks, the miner always stands in the front and mines out the front log resting on the pile of dirt. When this log is taken out, the two side logs are easily removed, and the other timbers can then be taken out, in turn, from the top down. It will generally be necessary to loosen the slate or rock at the back end with a pick, in order to release the side logs; but the miner need not go behind the chock to do this. This method avoids the use of a back log, the removal of which would give much trouble.

Recently, I had the contract on a longwall face advancing. The coal was 3 ft. 9 in. high, and the contract price was \$1.75 per yd., which included blowing down 2 ft. of roof, building the packs and setting and drawing all chocks and post timbers required. The chocks were

counted every month to see that none were lost, and when a pack was finished, the company inspector would pull the pieces off the pack to see that no hollow places or timbers were left in the wall.

During three years while working this contract, the only trouble experienced was an occasional fall at the face, or on one of the roads that had been stopped for a few days. In carrying the road along the face, I have used the method shown in Fig. 2, in which case it was necessary to "blow" or "brush" the roof along the face, as shown in the figure; but I consider this method dangerous. Two-piece sets were used, one end of the collar resting in the slate and the other end, at the coal face, resting on a tapered post, as shown in the figure.

CHARLES WAINES.

Marianna, Penn.

3

Letter No. 2—Referring to the mention, COAL AGE, Nov. 15, 1913, p. 723, of the working of a seam of coal, in Wales, by the longwall method, which was described by Erskine Ramsey in a paper read before the Alabama Coal Operators' Association, permit me to remark that I believe I helped to open out one of these seams of coal, which was 10 ft. thick.

It was opened at that time by driving entries and rooms. There was no face track as shown on p. 723. In order to support the roof, cribs were built every 4 to 6 ft. apart on each side of the roadways in the rooms and entries and crossbar timber was used to support the roof above the roads. At times, when the first weight would come on, it was necessary to build the cribs to within a foot of the coal face. I do not remember that there was any great caving of the roof.

This system of working was continued for about 12 months and then came a change of management and a change in the system of mining. A face track was laid, as described in the article to which I have referred. As a result of this change, the places were continually caving, and the company estimated their losses to be £125,000 in five years.

Then came another change in the management, and the system of working was changed back to the old entry-and-room system, with no face track. The new company then saved £74,000 the first year; and, in the first nine months of the second year, they had saved £64,000, at which time I left Wales and came to this country. In order to show how it is possible, in Wales, to pack or fill in the space left by taking out the coal in a 10-ft. seam of coal, the conditions in this coalfield should be explained.

In South Wales, there are 16 seams of coal, of which eight are workable, according to Prof. Galloway, in his description of the coalfields of South Wales. It is the

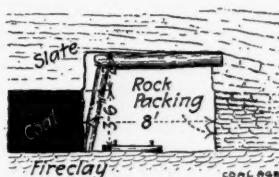


FIG. 2. A DANGEROUS METHOD

general practice to sink the shafts to the lower measures, and when the workings are sufficiently developed cross-tunnels are driven to tap the other seams. This gives the opportunity to secure enough building material for the 10-ft. seam, by taking it from the other seams that have more than enough for their own needs. A loaded car is taken out of a place and replaced by a car of dirt, and the miner is paid 3d. per car for unloading and packing this dirt in place.

In the case mentioned on p. 723, where the attempt was made to work a 5-ft. 6-in. seam of coal overlaid with an 18-in. draw slate, on the longwall plan, I think too much reliance was placed on the good roof. In changing the system from room-and-pillar to longwall work, in this particular seam, conditions seemed favorable. I would suggest that this should be done by starting to rob the pillars back, after having first secured the face of the coal by building cribs close to the same. As the pillars are drawn back, packs should be built with the draw slate. If there is not sufficient building material to fill the whole of the empty space, the packs should be built on the checkerboard system. In starting the longwall face, I believe that a 5-ft. mining is too deep, especially before the first weighting of the roof takes place. A 5-ft. mining gives too much leverage, which will probably break the roof before it can be properly secured after loading out the coal.

In the case mentioned where the 12-ft. skip was taken across the face that had caved, and this was followed by a second cave, I would say that the space was too wide. The roadway should not be over 9 ft. wide, and there should be 5 yd. of packs on the loose end. Then if cribs had been used, every 4 to 6 ft. along this space, I believe there would not have been a second cave. This opinion is based on an experience of several years in longwall work of every kind and 35 years of work in all classes of mines, gaseous and nongaseous.

Mystic, Iowa.

WILLIAM JAMES,
Mine Foreman.

xx

The Certificate Law

Letter No. 10—I have been reading the letter of Joseph Virgin, COAL AGE, Dec. 13, 1913, p. 912, in which he states that "a man might successfully manage mines in some of the districts in this state (West Virginia) and yet utterly fail in respect to safety in another state." He refers to some mines having gas, dust, water, bad roof and dangerous quantities of black damp, while other mines may have little of these dangers to contend with or be free from all of them. Mr. Virgin says: "Fancy a man, for instance, who has had charge of mines in the Clearfield region but with no other experience, coming to take charge of the gaseous mines of West Virginia or the mines on the Monongahela, etc."

I gained most of what experience I have in mines in Clearfield County, Penn.—mines that generated as much gas or more than any mine on the Monongahela. I want to say, also, that no mine in the latter district could compare with a mine of which I had charge in Jefferson County, in respect to the generation of gas. I did, however, see and learn much in regard to ventilation while in charge of one mine on the Monongahela. The mine had not been properly planned in the beginning and its proper ventilation was difficult on this account. My experience

and that of many other men, at that time, was that many of the mine foremen of the Monongahela mines were as far behind the times in their practical experience as most foremen in other counties and states.

I have been looking over the examination questions asked candidates for the positions of mine foremen and firebosses in the state of Pennsylvania, comparing them with the questions asked in other states, and I want to say that, judging from these questions, any man who has passed the examination in Pennsylvania and has had practical experience in the coal mines in this country or in England, is, in my opinion, able to take charge of any mine either in West Virginia or any other state. My observation convinces me that the examining boards in the bituminous regions of Pennsylvania, for several years past, have arranged the questions for mine foremen and firebosses, so as to cover all manner of mine work.

I fully believe it would be better for all concerned, if every mine foreman, fireboss and mine superintendent was compelled by law to undergo an examination every three years. My reason for this is that ten out of every dozen mine foremen and firebosses who are employed in the mines today, fail to give any time to study or to reading what will keep them in touch with the latest methods of mining work. Many of these men seldom look at a copy of the mining law and cease to read and study after passing the examination and securing a certificate of competency. Many with whom I have talked and whom I have advised to continue to study and to read mining journals, say that they "have not time to read, much less to study"; while others who take mining papers and mining courses lay them aside and devote no time to them, claiming that they "know it all."

I have engaged men who had in their possession first-grade and fireboss certificates, but who did not understand much of the work they had to do. My experience is about the same as that of Mr. Stansberry, in Letter No. 6, p. 913. As he says, these men "could not take a safety lamp apart, clean, fill and put it together again properly." At one time, I had shots fired in the mine by shotfirers, using the wire and the Davy lamp; and when shown how, many of these men could not understand that the gas was so strong at the working face as to make any other method dangerous to employ. It is inexplicable how such men obtain their certificates. I presume it is this sort of men to which Mr. Virgin refers.

A greater interest in the safety and welfare of mining men is being taken today; greater efforts are being made to render the mine immune from accidents of any nature; and more practical methods to secure the safer mining of coal are being insisted upon by all mine inspectors than ever before. It is only reasonable, then, to expect and require that all coal-mine officials shall continue to read, study and increase their knowledge of mining. But, notwithstanding this fact, there are yet a large number of mine officials who think they have all the knowledge they need and continue on in the same old rut. On the other hand, I am glad to say that there are some of the older experienced men who are glad to gain more knowledge themselves, and are striving to educate those in their charge and to assist them in preparing themselves for examinations.

JOHN J. CLARK,
Asst. Mine Supt.,
B. & S. Coal & Coke Co.
Saginaw, Penn.

The Danger of the Injector

In the Nov. 22 number of COAL AGE, on pp. 777 and 778, an article translated from the *Montanistische Rundschau*, makes an attempt to defend the injector type of mine-rescue apparatus and refers to Dr. John Cadman's paper as having first exploited the danger in the use of the injector. While this may be so in England, I happen to know that it is not true in the United States. J. W. Paul, of the Bureau of Mines, was the first to make this discovery after the death of Farrell, and the details of this accident were given to me by Austin King, of the H. C. Frick Coke Co.

Shortly after this I went to London, and at that time the only man in England who had apparently given the matter any serious attention was Henry A. Fleuss, who, over 30 years ago, invented the first practical self-contained oxygen rescue apparatus. In his effort to improve this, 14 years ago, he discovered the danger from the suction by the injector, and after some experiment dispensed with that device, on account of the danger from accidental leaks.

H. N. ELMER.

American representative, Siebe, Gorman & Co.
1140 Monadnock Block, Chicago, Ill.

Knowing

In looking over the several interesting articles in COAL AGE, Nov. 8, my eye caught the "Outerroppings," p. 702, and I read, "Knowing a thing is nothing unless another knows you know it." It is one thing to possess knowledge but quite a different thing to demonstrate that fact to another's satisfaction.

It is a fact that no matter what you know, without you can prove your assertions, your knowledge will be absolutely worthless to you or to anyone else. Again, you may be the *one* person present who knows *how* to do a certain piece of work, and could accomplish better results with the men in your charge, in a given time; but you will not be given a chance to demonstrate that fact unless the manager or superintendent will listen to you and you are able to secure his confidence.

The best mining men sometimes make mistakes, and many do not know what they profess to know; but the man who thinks he knows it all, generally knows the least. To the manager or superintendent, I would say, listen to the man who thinks he knows and give him a chance to demonstrate his ability if he has it and if his plans seem at all practicable. He may be able to save you time and money.

A KNOWING SUFFERER.

Study Course in Coal Mining

BY J. T. BEARD

The Coal Age Pocket Book

Furnace Ventilation—When the circulation of air throughout a mine is created and maintained by means of a furnace built in the mine the system is known as "furnace ventilation."

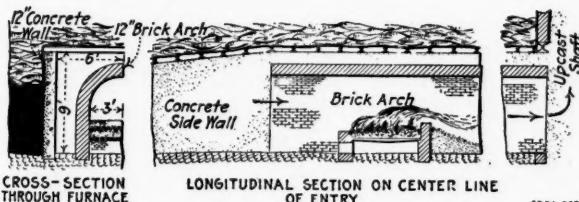
Principle of Furnace Ventilation—The heat of the furnace imparted to the air in the furnace shaft makes it lighter, volume for volume, which causes it to rise in obedience to the law of the equilibrium of fluids. The cooler and heavier outside air, in obedience to the same law, flows into the mine by way of another opening, to take the place of the air displaced. The action is continuous as long as the furnace is in operation. There is thus created and maintained a constant flow of air into and through the mine.

Location of a Mine Furnace—The furnace is built in the main-return airway about 20 or 25 yd. back from the foot of the upcast or furnace shaft, so as to reduce the danger of the fire damaging or destroying the shaft.

Construction of Furnace—The essential details to be considered in the construction of an efficient mine furnace are the following:

1. Beginning, say 50 yd. back from the foot of the shaft, the main-return airway should be gradually widened and its height increased so that the unobstructed sectional area at the furnace will not be less than 25 per cent. greater than that of the original airway.

2. The roof of the enlarged airway should then be secured by steel rails or I beams supported on posts or concrete walls, as illustrated in the accompanying figure, which represents a well built mine furnace.



3. As shown in the figure, both the concrete walls and the brick walls supporting the arch are started on a good firm bottom below the floor line. The thickness of the concrete walls will vary from 10 or 12 in. to 2 ft., depending on depth of cover and other roof conditions. The brick walls and arch will vary in thickness from 8 to 12 in. A good quality of vitrified brick should be used, except where the arch and walls are exposed to the direct action of the flame they should be lined with the best firebrick. All bricks should be first soaked in water before being laid and only the best cement mortar should be used.

The Coal Age Pocket Book

4. The brick walls and arch should be started about 2 yd. in front of the furnace proper and extended to the face of the shaft. The clear width between the walls should equal the width of the fire-grate, and should be such as to leave a clear passageway between the brick and concrete walls. The arch is semicircular and sprung at such a height above the floor as to leave not less than 12 in. of space between the crown of the arch and the rails that support the roof. The purpose of this air space around the furnace is to isolate its heat, which is thus more completely utilized in heating the air current.

5. The area of the grate or the grate surface must be sufficient to burn the weight of coal per hour required to heat the volume of air passing the furnace in that time, to a temperature that will create the air column, in a specified depth and condition of shaft, necessary to circulate such volume of air against a specified mine potential.

The theoretical problem of determining the weight of coal burned per hour, per volume of air circulated, is thus seen to depend on many factors. In ordinary mining practice, however, a safe estimate is to assume that each pound of coal burned per hour will cause a rise in temperature of from 10 to 15 deg. F., per 1000 cu.ft. of air in circulation. Or, calling the weight of coal burned W (lb. per hr.); the volume of air passing Qm (1000 cu.ft. per min.); the rise in temperature t (deg. F.), and the temperature constant c = 10 to 15 deg. F.,

$$W = \frac{Q_m t}{c}$$

Example—Find the weight of coal required per hour, to produce a rise of temperature of 360 deg. F., in a furnace shaft when a current of 100,000 cu.ft. of air per minute is passing, under fair mining conditions.

Solution—The weight of coal required is

$$W = \frac{Q_m t}{c} = \frac{100 \times 360}{12} = 3000 \text{ lb. per hr.}$$

In very deep or wet shafts or a comparatively small mine resistance, giving a larger air volume and greater loss of heat, the constant 10 deg. should be used; while in dry shafts of less depth, especially if the mine resistance is considerable, a temperature constant of 15 or even 16 may be employed to find the necessary grate area.

6. The grate area necessary to burn any required weight of coal W (lb. per hr.) varies with the hardness and the inflammability of the coal. A mine furnace will commonly burn from 15 to 20 lb. of anthracite, or from 20 to 25 lb. of bituminous coal, per square foot, per hour. Hence the weight of coal required, divided by such constant will give the necessary area of grate surface, in square feet.

Example—What grate area will be required to burn, say 3000 lb. of a very soft, inflammable coal per hour?

Solution—In this case, the coal being a free-burning, inflammable coal, the constant 25 should be used; and the required area is $3000 \div 25 = 120 \text{ sq.ft.}$

Inquiries of General Interest

Calculation of Sines and Cosines

Is it possible to calculate the sine and cosine of an angle, as, for example, 42 deg., when no table is at hand?

D. W. SEIGHMAN.

Martin, Penn.

The values of the sines and cosines are for the most part based on geometrical principles, from which trigonometrical formulas have been derived. By the use of these principles and formulas, it is possible to calculate the values of some of the more simply derived angles.

For example, referring to the accompanying Fig. 1, o being the center of the quadrant, oa is the radius. If

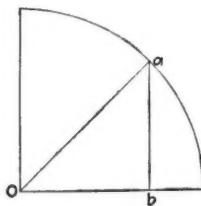


FIG. 1.

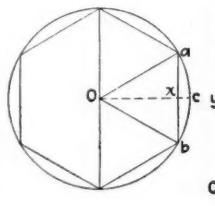


FIG. 2.

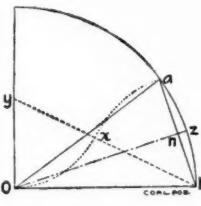


FIG. 3.

this radius, oa , bisects the quadrant, the angle aob is one-half of 90, or 45 deg. By definition, the sine ab is perpendicular to the cosine ob , and the angle oba is a right angle or 90 deg. Then, since the sum of the interior angles of a triangle is equal to 180 deg., the angle oab is $180 - (90 + 45) = 45$ deg.; and by the principles of geometry, ab is equal to ob , or the sine of 45 deg. is equal to the cosine of 45 deg.

All sines and cosines are expressed decimals, the radius of the arc being 1. Then, since the square of the hypotenuse of a right triangle is equal to the sum of the squares of the two sides,

$$(ab)^2 + (ob)^2 = (oa)^2$$

But, since $ob = ab = \sin 45$ deg.; and $oa = 1$, we have

$$2 \sin^2 45^\circ = 1$$

and $\sin 45$ deg. = $\sqrt{\frac{1}{2}} = \sqrt{0.5} = 0.7071$

Therefore, the sine and the cosine of 45 deg. are each 0.7071.

In like manner, by the principles of geometry, a regular hexagon is composed of six equilateral and equiangular triangles. If such a regular hexagon be inscribed in a circle, as shown in Fig. 2, any side ab is equal to the radius oa , and the angle aob is equal to 60 deg. The radius oc , bisecting the arc acb , also bisects the angle aob , and is perpendicular to the chord ab at its middle point x . Hence, in this case, calling the radius $oa = 1$, $ab = 1$ and $ax = \frac{1}{2} ab = 0.5$. But the angle aoc is 30 deg.; and ax is the sine and ox the cosine of 30 deg..

Therefore,

$$\sin 30^\circ = 0.5$$

$$\cos 30^\circ = \sqrt{1^2 - 0.5^2} = \sqrt{0.75} = 0.866$$

Again, the sine of an angle is always the cosine of the

complement of that angle, which is 90 deg. minus the angle. Therefore,

$$\sin 30^\circ = \cos (90 - 30) = 0.5$$

or,

$$\cos 60^\circ = 0.5$$

In like manner the cosine of an angle is always the sine of its complement. Therefore,

$$\cos 30^\circ = \sin (90 - 30) = 0.866$$

or,

$$\sin 60^\circ = 0.866$$

Once more, referring to Fig. 3, by the principles of geometry (Euclid, 2, 10), assuming a radius $oa = 1$, laying off $oy = \frac{1}{2}$ and drawing yb ; we have $yb = \sqrt{1^2 + \frac{1}{2}^2} = \sqrt{1 + \frac{1}{4}} = \frac{1}{2}\sqrt{5}$.

Then, with y as a center and a radius yb , describe the arc ox . Again, with b as a center and a radius bx , describe the arc xa . Now, draw the cord ab and the radius oz perpendicular to this cord at its middle point n . But, $ab = xb = yb - yx$. Hence, $ab = \frac{1}{2}\sqrt{5} - \frac{1}{2} = \frac{1}{2}(\sqrt{5} - 1)$.

Now, by the principles of geometry, under this construction, the angle $aob = 36$ deg.; and the angle $aoz =$ one-half $36 = 18$ deg. But, $an =$ one-half $ab = \sin 18$ deg. Therefore,

$$\sin 18^\circ = \frac{1}{4}(\sqrt{5} - 1) = 0.30902$$

$$\cos 18^\circ = \sqrt{1^2 - 0.30902^2} = 0.95106$$

From the three figures that we have given, it is thus possible, by geometrical principles, to calculate exactly the sine and cosine, respectively, of the following angles: 18, 30, 45 and 60 deg.; and observe $\sin 90^\circ = 1$; $\cos 90^\circ = 0$. Using these values as the base of calculation, the sines and cosines of other angles that are the sum or the difference of the angles given can be exactly calculated by means of the following trigonometrical formulas:

$$\sin(a + b) = \sin a \cos b + \cos a \sin b$$

$$\sin(a - b) = \sin a \cos b - \cos a \sin b$$

$$\cos(a + b) = \cos a \cos b - \sin a \sin b$$

$$\cos(a - b) = \cos a \cos b + \sin a \sin b$$

The sine and cosine, respectively, of twice or one-half of any angle A are given by the formulas

$$\sin 2A = 2 \sin A \cos A$$

$$\cos 2A = 1 - 2 \sin^2 A.$$

$$\sin \frac{1}{2}A = \sqrt{\frac{1 - \cos A}{2}}$$

$$\cos \frac{1}{2}A = \sqrt{\frac{1 + \cos A}{2}}$$

To calculate the sine of 42 deg., proceed as follows:

$$\sin 15^\circ = \sin \frac{1}{2}30^\circ = \sqrt{\frac{1 - 0.866}{2}} = 0.2588$$

$$\sin 3^\circ = \sin (18^\circ - 15^\circ) = 0.3090 \times 0.9659 - 0.95106 \times 0.2588 = 0.0523$$

$$\sin 42^\circ = \sin (45^\circ - 3^\circ) = 0.7071 \times 0.9986 - 0.7071 \times 0.0523 = 0.6691$$

Examination Questions

Mine Inspectors' Examination, Held at Springfield, Ill., Dec. 15, 1913

(Selected Questions)

Ques.—If 20,000 cu.ft. of air pass in a circular airway 12 ft. in diameter, what quantity of air will pass in one 6 ft. in diameter?

Ans.—The question probably means to ask what quantity of air will pass, assuming the *velocity* of the air current remains unchanged. For a constant velocity, the quantity of air passing will vary as the area or as the square of the diameter. In that case, the quantity ratio is equal to the square of the diameter ratio. Thus,

$$\frac{x}{20,000} = \left(\frac{6}{12}\right)^2 = \left(\frac{1}{2}\right)^2 = \frac{1}{4}$$

$$x = \frac{20,000}{4} = 5000 \text{ cu.ft. per min.}$$

This question can also be answered by assuming a constant ventilating pressure, in which case the quantity ratio is equal to the square root of the fifth power of the diameter ratio; or,

$$\frac{x}{20,000} = \sqrt{\left(\frac{1}{2}\right)^5} = \sqrt{\frac{1}{32}} = \sqrt{0.03125} = 0.1767$$

$$x = 20,000 \times 0.1767 = 3534 \text{ cu.ft. per min.}$$

Again, it may be assumed that the power on the air is constant, in which case the quantity ratio is equal to the cube root of the fifth power of the diameter ratio; or

$$\frac{x}{20,000} = \sqrt[3]{0.03125} = 0.3150$$

$$x = 20,000 \times 0.3150 = 6300 \text{ cu.ft. per min.}$$

Ques.—An entry in a mine is driven N 40 deg. E and the rooms are turned N 10 deg. W. If the pillars are 30 ft. wide and the rooms 24 ft. wide, what is the distance between room centers, measured on the entry?

Ans.—The distance between room centers measured square across the rooms is $30 + 24 = 54$ ft. The corresponding distance measured on the entry is found by dividing the distance measured across the rooms by the sine of the angle the rooms make with the entry. Since the entry bears 40 deg. to the east of north and the rooms bear 10 deg. to the west of north, the angle between the rooms and the entry is $40 + 10 = 50$ deg. Then, the distance between room centers, measured on the entry, is

$$d = \frac{54}{\sin 50^\circ} = \frac{54}{0.766} = 70.5 \text{ ft.}$$

Ques.—If 30,000 cu.ft. of air enters a shaft 14 ft. in diameter, at a temperature of 60 deg. F., what diameter of upcast is necessary to pass the same weight of air, at the same velocity, the temperature of the upcast being 90 deg. F.?

Ans.—For the same weight of air and velocity of the air current, the sectional area of the shaft must increase in proportion to the expanded volume of the air current,

which is in the ratio of the absolute temperatures of the downcast and upcast shafts. But, since the diameter varies as the square root of the area, the diameter ratio is equal to the square root of the **area ratio or the absolute-temperature ratio**. Therefore,

$$\frac{x}{14} = \sqrt{\frac{460 + 90}{460 + 60}} = \sqrt{\frac{550}{520}} = \sqrt{1.0577} = 1.028$$

$$x = 14 \times 1.028 = 14.39 \text{ ft.}$$

Ques.—What horsepower would an engine exert when yielding 60 per cent. of **duty**, to move 100,000 cu.ft. of air per minute, the **water gage** standing at 1 in.?

Ans.—The effective horsepower or the horsepower on the air, in this case, is

$$H = \frac{Qp}{33,000} = \frac{100,000 (1 \times 5.2)}{33,000} = 15.757 \text{ hp.}$$

The gross horsepower of the engine is then $15.757 \div 0.60 = 26.26$ hp.

Ques.—We have a tank full of water in the morning when **commencing** work and no more water in sight, as the **well** is dry. The tank is a circular one 12 ft. in diameter at the top, 14 ft. at the bottom and 18 ft. deep. How long will we be able to run, using 1200 hp.?

Ans.—This tank being a frustum of a cone, its volume is calculated thus:

$$\text{vol.} = 0.7854 \frac{h}{3} \frac{D^3 - d^3}{D - d} = 0.7854 \times \frac{18}{3} \times \frac{14^3 - 12^3}{14 - 12}$$

$$= 0.7854 \times 6 \times \frac{2744 - 1728}{14 - 12} = \frac{0.7854 \times 6 \times 1016}{2}$$

$$= 2394 \text{ cu.ft., nearly}$$

It is usual practice to estimate the consumption of water as 35 lb. standard per horsepower per hour; which gives in this case $1200 \times 35 = 42,000$ lb. per hr. Taking the weight of water as 62.5 lb. per cu.ft., the quantity of water used per hour is $42,000 \div 62.5 = 672$ cu.ft. per hr. The length of time this tank full of water will last is, then, $2394 \div 672 = 5.56$ hr., say 5 hr. 30 min.

Ques.—What load will break a white-oak timber 8x12 in. and 15 ft. between the supports, if the load is equally distributed along the length of the beam?

Ans.—For a beam supported at both ends, and uniformly loaded, the breaking load is calculated by the formula

$$L = \frac{4 f b d^2}{3 l}$$

the dimensions all being expressed in inches, and the breaking load estimated in pounds. Substituting values in this formula as follows: Unit stress, white oak, $f = 8500$ lb. per sq.in.; breadth of beam, $b = 8$ in.; depth of beam, $d = 12$ in.; length of beam, $l = 15 \times 12 = 180$ in.; we have

$$L = \frac{4}{3} \times \frac{8500 \times 8 \times 12^2}{180} = 72,533 \text{ lb.}$$

$$L = \frac{72,533}{2000} = \text{say } 36\frac{1}{4} \text{ tons}$$

Coal and Coke News

Washington, D. C.

Although the Congressional investigating committee charged with the duty of reporting on the conditions of the mining strike in West Virginia has not yet made ready its report for publication. Senator William E. Borah, of Idaho has completed a statement on the subject embodying his own views which he has just made public. Senator Borah takes a strong attitude in opposition to the action of the State of West Virginia and of the coal mine owners in that region.

He finds that martial law was declared in the Paint and Cabin Creek region about Sept. 2, 1912 and continued in force except at short intervals until June 1913. During this time various individuals were arrested, tried and convicted for alleged offenses, upon orders issued by the military authorities and not by virtue of any warrant issued by the civil authorities or from established courts.

These parties were put upon trial, he asserts, without the finding of any indictment by the Grand Jury before a court martial created by the order of the Commander in Chief, while the charges made against them were in the nature of specifications drawn up and presented by the military authorities. Continuing Mr. Borah says:

In the trial of these parties and in the assessing of punishments, the court before which they were tried deemed itself bound alone by the orders of the Commander in Chief, the Governor of the State and in no respect bound to observe the Constitution of the United States or the constitution or statutes of the State of West Virginia relative to the trial and punishment of parties charged with crime.

At the time these arrests were made and the trials and convictions had, the civil courts were open, holding their terms as usual, disposing of cases and dispensing justice, in the usual and ordinary manner. In rendering judgment and assessing the punishment, the parties were punished by terms of imprisonment unknown to the statutes or in excess of the punishment provided for such offenses under the laws of the state. A number of these parties were sent to jail and many to the State Penitentiary under sentence of this court martial as approved by the Government.

Most of those who were sent to the Penitentiary were given a conditional pardon before the term for which they were sentenced had expired, the pardon being conditional in a general way upon good behaviour. . . . No threats of violence or use of force was made or had against the judges or the courts at any time during the existence of the disturbance or the reign of martial law. . . . Great feeling and interest doubtless prevailed generally throughout the country, but the existence of this feeling and its effect upon grand or petit juries were not tested by the calling of a Grand Jury, or the submitting of the charges against those persons to a Grand Jury, and no attempt was made to try them before a petit jury—the officers of the county, after the declaration of martial law proceeding upon the assumption that the feeling and prejudice were so strong as to prevent the operation of the civil authorities, together with a further belief that the declaration of martial law had the effect of suspending and nullifying all constitutional and statutory rights of the accused.

It had been expected that Senator Borah's report would be strongly critical of the mine owners and the belief is that although his report is not officially sanctioned by the committee, he being a minority member, that it will be a part of the majority's report, which however, is expected to go considerably further in direct condemnation of the mine owning interests than did the senator from Idaho.

Investigations to Be Made

The United States Committee on Industrial Relations has voted to carry on a direct investigation on the spot in the Calumet copper region and in the Colorado coal mining region, for the purpose of ascertaining the nature of the conditions prevailing in those two parts of the country where aggravated mining controversies have been in progress.

This action on the part of the Committee has been loudly called for during the past few weeks in both Houses of Congress, it being claimed that such an investigation should properly be undertaken by the Committee in question, in order that the facts as to the merits of the strike in each place may be definitely known.

It has been alleged that the action of members of Congress in thus demanding such an investigation was certainly to be regarded as a severe reflection upon the Department of Labor to which would naturally fall, as in the past, the duty of investigating such disorders and if possible offering arbitration or mediation with reference thereto.

The Department of Labor under its present head has

been reluctant to do any thing of the kind and has almost refused to do anything that might seem to involve a possible criticism of or difference of opinion with organized labor in the United States.

The present head of this department has at various times announced himself as a confirmed trade unionist, asserting that his opinions on that subject remained the same as in the past—a position which has greatly tended to weaken him with employers who have regarded the arbitration function as one which was properly to be carried on by a non-partisan investigator.

The findings of the industrial commission will not be likely to be made known for a good while to come as the fieldwork is expected to occupy special agents for a considerable time.

PENNSYLVANIA

Anthracite

Wilkes-Barre—While taking measurements in the Maltby mine of the Lehigh Valley Coal Co. recently, two firebosses and a mine foreman were severely burned by an explosion of gas, and for three hours after the accident were entombed in the mine because the ropes had been taken from the cage by a force of men who were making repairs. Rescuers, by walking several miles in a roundabout way, finally reached the injured men.

Catasauqua—The Lehigh Coal & Navigation Co. recently issued a notice to the effect that part of the Lehigh Canal from Coalport to Catasauqua would be abandoned after Apr. 1. After that date coal will be carried between Coalport and Catasauqua over the new branch of the Lehigh and New England R.R.

Seranton—Offending coal companies here are being hedged about on all sides. Recently the city of Scranton again officially entered the list of the complainants against the promiscuous mining of coal in a manner that places the surface in jeopardy. The bill in question explains that the general manager of the Scranton Coal Co. recently served notice on a number of property owners explaining that the pillars will shortly be removed from under their homes.

Harrisburg—Under a ruling recently issued by Auditor General Powell, anthracite coal companies will be exempted from paying tonnage tax on the coal used in the operation of the collieries, but that dredged from rivers and streams is taxable. Every operator is required to furnish the auditor general during the month of January the number of tons mined during the preceding year. If he intentionally refuses or fails to furnish the information he can be prosecuted and, on conviction, be fined not more than \$500, or imprisoned not more than one year; or fined and imprisoned in the discretion of the court.

Bituminous

Connellsville—The Connellsville and lower Connellsville coke region during the year 1913 shipped in the aggregate 20,097,901 tons of coke valued at \$59,288,808, the average price of all merchant coke being \$2.95 a ton. The year 1912 was beaten for quantity and quality, the cash returns being 55% in excess of that received during the previous year. In both quantity and value, however, the business in 1906 and 1907 was close to that of 1913.

Johnstown—The call for the next biennial convention of the delegates from all the locals in District No. 2 of the United Mine Workers of America was issued Jan. 7. It is understood that the convention will be held in Du Bois, on Feb. 24. The scale committee will be ready to begin work on Mar. 1, and the operators will be notified that if they propose taking part in a joint conference again they must have their committee ready for deliberation by that date.

Punxsutawney—The year just closed was one of the most prosperous in the history of Jefferson and Indiana Counties, so far as mining was concerned. The mines have worked throughout the year and allied industries have been correspondingly busy. Except for an occasional strike the miners have worked almost without interruption since Jan. 1, 1913, and the prospects for a continuance of excellent business are good.

Pittsburgh—The annual report of mine inspectors will indicate an increased output during 1913 in almost all local districts. More accidents have occurred, however. In spite of safety and first-aid work, more miners were killed than in 1912, but more were employed than for many years, although this number was insufficient. The coal markets were lively, due in part to floods in the early spring.

WEST VIRGINIA

Charleston—It is believed that all the contracts in the \$50,000,000 New River coal deal will have been printed, properly signed and sealed, and copies filed with one of the Charleston banks in a short time. The representatives of the London syndicate will then sail with copies for England, with the purpose of arranging for the first payment of \$1,500,000 in February.

Wheeling—The coal mines of this state and the Ohio sub-districts are averaging at present about two days' work per week. Many of the operations are shut down entirely and most of those working are on only about half time. This apathy is explained by the lack of orders, which is an annual affair occurring about this time of year.

Fairmont—The Consolidation Coal Co. completed the past year with a production of about 11,000,000 tons, or 800,000 tons more than was secured in 1912. Every ton of this fuel was marketed at prices higher than those received a year ago. It is estimated that the production would have been at least one million tons greater had it not been for the floods in the Central West last spring, which paralyzed railroad traffic for nearly a month and prevented shipment to that territory.

Bluefield—The shop and drum house of the Borderland Coal Co. were totally destroyed by fire recently. In addition to the buildings, all tools, electric motors, and other valuable equipment were destroyed and considerable damage done to tracks leading to the mine. The origin of the fire is unknown.

KENTUCKY

Lexington—The Kentucky Utilities Co., which is said to be controlled by the Insull interests of Chicago, and which has acquired a large number of electric plants in central and southeastern Kentucky during the past year, recently took over a plant at Harlan, Ky., in the heart of the Harlan County coal-field. The plant is a small one at present, but is destined to form one of a chain of power plants operated by the company in the coal field referred to. The company is now constructing a trunk line for the distribution of current from its central plant at Pocket, Va., and the Harlan, Varilla, Pineville and other plants now owned by the company will form important factors in the development of the coal fields in that section, in connection with the power from the Virginia plant.

Middlesboro—The Low Ash Coal Co., a West Virginia corporation which a few months ago purchased the old Mary Moore mines near Middlesboro, has completed the installation of new machinery at the mine and begun the shipment of coal. The Barner seam is mined on the property. The company has a capital stock of \$20,000, and was recently incorporated.

OHIO

Columbus—Arch Grossman, who represented the New York Coal Company, of Columbus, Ohio in Indiana territory for a number of years has resigned to open a jobbing business in Indianapolis under the name of the Cedar Creek Coal Co.

New Lexington—The Blue Rock Run Coal Co. has started work on a new mine on the Olden Farm in Harrison Township in Perry County. The seam is 5 ft. thick.

INDIANA

Carlisle—The Carlisle coal mine and the Bellevue mine, near here, which have been idle two years, have been reopened.

Terre Haute—The Indiana Coal Operators Association has decided to stand back of the Queen Coal Mining Co. in its dispute at two of its mines near Jasonville over a technical construction of provisions in the contract as to certain working conditions. The Association protects its members in strikes on such occasions by providing coal to fill contracts depending on the output of the mines in trouble.

Illinois and Indiana miners will endeavor to get a uniform wage contract to succeed the two-year agreement that will expire Mar. 31. They are pleased with their individual contracts so far as they go but each state has some conditions the other one wishes and neither do the miners wish, they say, to give operators in one state any advantage in working conditions in mines over the operators of the other state, which affect the cost of production and enable one to undersell the other. William Houston, president of the Indi-

ana United Mine Workers and vice-president Lord of the Illinois Mine Workers are drafting the contract that will be submitted for the approval first of the miners and then of the joint conference of miners and operators.

Bicknell—Aliceville is the name selected for a new coal town being promoted on coal lands owned by the Zeller & McClellan Coal Co. about three miles west of here, H. R. McClellan, Clinton, Ind., being manager of the company. The company has 6000 acres. One mine is being opened and others will be sunk.

ILLINOIS

Springfield—The United Mine Workers in Illinois are going to prevent their members from getting beat out of their wages on account of mine failures in the future if, according to rumor, the Mine Workers succeed in putting through one of the propositions that will come up as an issue in the new settlement on Apr. 1. This proposition is that every operator must put up a bond, protecting the maximum number of employees employed at each mine for twice the maximum pay roll, or something along those lines, with possibly some modifications. If they succeed in getting this proposition through, it will put a large percentage of the mines out of commission.

New Baden—A fire at the New Baden mines, twenty miles east of Belleville, recently destroyed the blacksmith, machine and storage shops and partly burnt the boiler house. The damage is estimated at \$5000, and 600 men will be out of employment until repairs can be made.

Harrisburg—George F. Wilson, who absconded with \$11,000 belonging to the Seventh subdistrict of District 12, United Mine Workers, has been arrested in Spokane, Wash. Officers from Herrin have gone after him. Wilson was secretary-treasurer of the district at the time of his disappearance. He deserted his wife, who is now living in East St. Louis.

SOUTH DAKOTA

Woonsocket—While boring an artesian well upon the farm of Joseph Dodd at a depth of 430 ft., a bed of soft coal, 20 ft. thick, was encountered. This was accompanied with traces of oil. As lignite coal exists in vast quantities in the northwestern part of the state, it is believed that it will also be found in paying quantities here. This discovery on the Dodd farm has caused considerable excitement throughout this section.

COLORADO

New Castle—The Coroner's Jury, which has been investigating the recent explosion at the Vulcan mine rendered a verdict recently declaring that the operators did not sprinkle the mine properly, permitted the use of open lights, did not forbid smoking by the miners, and frequently fired shots while men were working in the pits. The Coryell Leasing Co. operates this mine.

Steamboat Springs—Seven members of the United Mine Workers of America charged with rioting in the miners' strike were sent out of town Jan. 3 by the Routt County Taxpayers' League. The League issued a notice that every miner in the county must find work or leave.

MONTANA

Red Lodge—Operations were recently resumed at the Brophy coal mines in the Bearcreek field following a shutdown caused by the miners going on strike because of the discharge of one of their number. The decision to return to work was reached by the local union after several fruitless conferences with the mine management in an effort to secure the reinstatement of the discharged miner.

FOREIGN NEWS

Vladivostok, Siberia—A dangerous fire recently broke out in a local mine, and was supposed to be due to incendiarism. Two hundred men were employed in the mine, and when the fire broke out 50 were underground.

Nagasaki, Japan—Recent surveys made at Iojima (an island in Nagasaki Harbor) confirmed the opinion of experts that a valuable deposit of coal exists there. Its quality is said to be the same as that of the Takashima coal and in quantity it is thought to be equal to the Nakanoshima field near Nagasaki. If this deposit proves as valuable as it is supposed to be Nagasaki will be fortunate in having an abundant supply of good coal near the entrance of its Harbor, and local business circles anticipate a revival of prosperity as the result of opening a mine.

TRADE CATALOGS

The Ingersoll Rand Co., 11 Broadway, New York. "Calix Bore Holes," 15 pages $3\frac{1}{2} \times 5\frac{1}{2}$ in. illustrated, describing calix core drills.

Buff & Buff Mfg. Co., Jamaica Plain, Boston, Mass. "Buff," a 30-page, 4x6-in. booklet describing the construction of Buff precise transits.

The Sullivan Machinery Co., 122 South Michigan Ave., Chicago. Bulletin 66-H, "Sullivan Rock Drills." Fifty-six pages, 6x9 in.; illustrated.

The Ingersoll-Rand Co., 11 Broadway, New York City. "The Story of the Imperial." Pamphlet of 20 pages, 6x9 in., describing the manufacture of air compressors.

The Draeger Oxygen Apparatus Co., 422 First Ave., Pittsburgh, Penn., "Draeger Pumotor." Pamphlet of 32 pages, 6x9 in., illustrating and describing the pumotor and its uses.

The Eveland Engineering & Manufacturing Co., 2324-2328 Market St., Philadelphia, Penn., "Eveland Electric Riveter." Folder of 10 pages, $8\frac{1}{2} \times 11$ in., describing the Eveland electric riveter.

Alberger Pump & Condenser Co., New York. Bulletin No. 18. "Alberger Spiroflo Surface Condensers." Pamphlet of 32 pages, 6x9 in., illustrating and describing Alberger condenser apparatus.

The Armstrong Cork Co., Pittsburgh, Penn. "Nonpareil Insulating Brick," 31 pages, 5x7 in., illustrating and describing an insulating brick which transmits about one-tenth as much heat as ordinary fire brick.

Coppus Engineering and Equipment Co., Worcester, Mass. "Coppus Turbo Blower." A pamphlet of 36 pages, 4x9 in. copiously illustrating and describing the details and application of the Coppus blower for increasing the draft of furnaces.

Arthur G. McKee, Contracting Engineer, Cleveland, Ohio. "Storage Bins." Pamphlet of 26 pages, illustrating and describing the Baker patent suspension type of storage bins, and the many and various uses to which these structures may be put.

The Ingersoll-Rand Co., 11 Broadway, New York, pamphlet form 8011, "Little David Riveters." Eight pages 6x9 in. illustrated; describing Little David riveting hammers with capacity for driving rivets up to from $\frac{1}{4}$ in. to $1\frac{1}{4}$ in. in diameter.

The Pneumelectric Machine Co., Syracuse, N. Y. "Pneumelectric Room Hoists," 15 pages, 6x9 in., illustrating and describing the construction and application of machines especially designed to easily and quickly handle cars over local dips, grades, etc., and make easier and more effective the work of both men and mules.

PERSONALS

George Wales, civil and mining engineer, has been appointed city engineer of Central City, Ky.

John M. Roan, member of the recent Ohio State Mining Commission, has been appointed to take charge of the safety and accident prevention bureau of the mining department.

John Sanderson, of Red Lodge, Carbon County, Mont., succeeded J. B. McDermott as state coal mine inspector of Montana on Jan. 1. Mr. McDermott held this position long and creditably.

"Mother" Jones, prominent labor leader, was recently deported from Trinidad, Colo. She was met at the train and ordered to get back on board and continue traveling until out of the strike district.

E. J. Pietzcker formerly Southwestern Sales Manager for the Standard Underground Cable Co., has been made Western and Southwestern Manager for the same firm, in charge of the offices in both Chicago and St. Louis.

Thomas M. Jenkins, of St. Louis, has been appointed general manager of the St. Louis & O'Fallon Coal Co. The mines of the company are located in the vicinity of O'Fallon, Ill., and last year produced 7,000,000 tons of coal.

Neal Robertson, of Charleston, W. Va., recently appointed receiver of the La Folette Coal, Iron & Ry. Co., of La Folette, Tenn., after spending a week at the operation left on Jan. 3 for New York, on business connected with the receivership.

Clarence Hall having acted in the capacity of expert in charge of the explosive section of the U. S. Bureau of Mines for seven years, has tendered his resignation in order to establish an industrial laboratory in the city of Pittsburgh. Analyses and tests of explosives will be made a specialty.

William Haggerty, recently underground superintendent of the Red Lodge coal mines of the Northwestern Improvement Co., has been raised to the position of superintendent of the whole works. C. C. Anderson, who held this position prior to Mr. Haggerty's elevation, is now general manager of the company and all the coal properties of the Northern Pacific System.

OBITUARY

James Lackey, a prominent member of the Philadelphia Coal Exchange, died in that city recently after a slight illness. He began business in Philadelphia about 35 years ago.

John Skeath, mining expert, recently died at the state hospital at Mahanoy City, following a stroke of paralysis, at the age of 70 years. Mr. Skeath began life as a slate picker, became chute boss, foreman, superintendent and finally general manager for the Reading Coal Co. in this district.

CONSTRUCTION NEWS

Cannonsburg, Penn.—The Pittsburgh Coal Co. is digging a shaft on what was formerly the Hopper farm about half a mile from Hill's station.

Brownsville, Penn.—The Denbeau Coke Co. plans to erect 64 ovens next spring, which will make its plant one of 300 ovens of the rectangular type. It is also planned to erect a \$50,000 washer.

Cumberland, Md.—Work will begin shortly on the new nine-mile railroad branch of the Federal Clay, Coal and Lumber Co. from Cooksville Mills, Penn., to Confluence tapping a rich coal and timber country.

Roscoe, Penn.—Work has begun upon the building of the new tipple for the Eclipse mine above Wood Run station. This structure is to cost about \$70,000. Work of erection is in charge of the Bravo Construction Co.

Connellsville, Penn.—The Snowden Coke Co., of Pittsburgh, has recently bought the plant of the Mt. Hope Coke Co. and about 1050 acres of coal adjoining from other owners. It is planned to increase the present plant from 150 rectangular ovens to 400.

Kingwood, W. Va.—The North American Coal Co., of W. Va., has closed an agreement with James A. Comley, of Morgantown, for the development of a tract of 100 acres of coal on the Monongahela River and along the Buckhannon & Northern R.R.

Clarksburg, W. Va.—The Clarksburg Northern R.R. has been completed to the corporate limit of Middlebourne, and but one bridge prevents entrance to the town. The last rail before crossing the creek will soon be laid, and the completion of the road will be made an important event by the people of Tyler and Wetzel Counties.

Huntington, W. Va.—In order to furnish power to about 12 coal operations that are located upon its holdings, the firm of Montgomery Clothier & Tyler, of Philadelphia, has installed a plant at Sharples, W. Va., on Coal River, at a cost of about \$75,000. This plant will furnish power to operations for miles around, having a capacity of 1000 kw.

Youngstown, Ohio—Work is progressing rapidly on the byproduct coke plant being built by the Republic Iron & Steel Co. It will contain 68 byproduct ovens of the Koppers type and will have a daily capacity of 800 to 1000 tons. It is expected that this plant will make enough coke to supply the company's blast furnaces in the Youngstown district.

Connellsville, Penn.—The Pennsylvania R.R. has completed the extension of the Monongahela & Southern from Rice's Landing to the Crucible Coal Works, and passenger trains are being operated daily over the additional trackage. It is understood that eventually this road will be extended up the Monongahela River to Queensboro, where it will connect with the Monongahela R.R.

Morgantown, W. Va.—About 25 men have been put to work on the siding for the mine to be opened on the Comley property, about half a mile above Maidsville, by the North Ameri-

can Coal Co. While the siding is being put in by one gang, another force is at work opening up the mine, which is to be operated as a drift. Work on the tipple will be started as soon as the siding is in.

Woodward, Ala.—Between \$700,000 and \$1,000,000 will be expended by the Woodward Iron Co. and allied interests in the construction of new plants during the present year. This is the beginning of a series of additions to be made at Woodward. It is announced that 30 by-product coke ovens will be started within the next 30 days. In addition to this a creosoting plant will be erected by the American Creosoting Co., which will be one of the most modern in the South.

NEW INCORPORATIONS

Lynchburg, Va.—The Black Wolf Coal & Coke Co. has increased its capital stock from \$150,000 to \$225,000.

Sheboygan, Wis.—The C. Reiss Coal Co. of Sheboygan has filed an amendment increasing its capital from \$800,000 to \$2,000,000.

Shinnston, W. Va.—The Bridgeport Gas Coal Co. has been incorporated here with a capital stock of \$50,000 to develop coal mines.

Frankfort, Ky.—The Bank Coal Co., of Williamsburg, recently filed amended articles of incorporation, increasing the capital stock from \$6000 to \$8100.

Sullivan, Ind.—The Vance Coal Co. has been organized with a capital stock of \$10,000. The directors are O. P. Smith, B. W. Lovett, W. H. Vance and others.

Cleveland, Ohio—Notice has been filed by the Kea Coal Co., of Cleveland, of an increase in its capital stock from \$10,000 to \$150,000 and of a change of name to the Indian Hill Coal Co.

Chicago, Ill.—A certificate of increase in capital stock of the Southern Illinois Coal & Coke Co. with headquarters in Chicago, was recently filed at Dover, Del. The increase is from \$1,000,000 to \$1,200,000.

Wheeling, W. Va.—The James H. Emblem Co. has been incorporated with a capital stock of \$100,000 to manufacture coke and sell coal and gas. The incorporators are James H. Robert, Albert, George, Sarah and Rosella Emblem.

Charlestown, W. Va.—The Gassaway Coal Oil and Gas Co. of Gassaway has been organized for the purpose of operating oil, gas and coal. The capital stock is \$25,000 of which amount \$500 has been subscribed and \$50 paid. The incorporators are: Grace Jacob, C. J., L. G. and A. L. Schearer.

Great Falls, Mont.—The National Coal Co. has been recently incorporated to carry on a general coal and fuel business. The capitalization is \$100,000, and it is declared by the organizers that the new concern is one of the largest fuel companies in the Northwest.

Charlestown, W. Va.—The Extrapoca Coal Co. has been organized at Bramwell, Mercer Co. for the purpose of operating coal mines in McDowell Co. The capital stock is \$10,000 of which amount \$500 has been subscribed and \$50 paid. The incorporators are: J. F. Biggs, H. S. Brown, B. W. Freeman, J. E. Jones, and Hattie Brown.

Logan, W. Va.—The Reece Coal Co. has been organized with a capital stock of \$25,000 for the purpose of mining coal and manufacturing coke. The incorporators are J. C. Alderson, F. B. Robertson, R. L. Shrewsbury, of Logan, W. Va., L. E. Browning, Reece Browning, of Chancery, W. Va., and T. O. Deaumer, of Huntington, W. Va.

INDUSTRIAL NEWS

Pittsburgh, Penn.—Pittsburgh officials of the Pennsylvania R.R. predict an increase in the coal traffic in January which will continue until after Mar. 1.

Harrisburg, Ill.—The Guaranty Trust Co., of Chicago, has sold to the Chicago Harrisburg Coal Co. about 20,000 acres of coal land in the western section of Saline County.

Berlin, Germany—A mining engineer at Bochum is said to have invented a successful wireless apparatus for signalling the imminence of perilous conditions inside a coal mine to the station at the pit mouth.

Morgantown, W. Va.—The first shipment of coal over the Buckhannon & Northern R.R. was recently made from the newly opened mine of the Sterling Co., on the west side of the Monongahela river opposite Point Marion.

Washington, D. C.—J. G. Wright, commissioner to the five civilized tribes of Oklahoma has been authorized to make new leases for the surface of the segregated coal and asphalt lands of the Choctaw and Chickasaw Indians for another year.

Punxsutawney, Penn.—Deeds for 17 tracts aggregating 1700 acres of coal land in East and West Wheatfield townships have been recorded by attorney Frank P. Barnhart for the Operators' Coal Co.

Brownwood, Texas—What is believed to be a large field of lignite has been discovered in the eastern portion of Brown Co. and more than a 1000 acres have been leased to Wright Stewart and G. F. Wilson.

Berlin, Penn.—About 1000 acres of coal land belonging to the Johnson estate adjoining the holdings of the Brothers Valley Coal Co. have been recently sold to the Brothers Valley interests for what is said to be \$100 per acre.

Marion, Ill.—The Black Diamond R.R. recently sold at auction and was bid in by E. M. Stotlar for \$28,200. A coal mine was included with the road which is graded 12 miles east of Marion and is in operation as far as Pittsburg which is six miles distant.

Huntington, W. Va.—Fifteen of the 70 steel hopper-bottom cars ordered from a Butler, Penn., firm by the Chesapeake & Ohio R.R., have arrived and were taken to the coal fields. It is said that these cars will be used principally for the shipment of coal to tidewater.

West Newton, Penn.—Jacob F. Paterson, of Waynesburg has purchased from David M. Comstock and J. D. Loughman, of Morris Township their interests amounting to 50 acres in what is known as the Frederick Loughman tract of land near Deer Lick in Greene Co. for \$260 per acre.

Franklin, Penn.—The Pennsylvania Southern, Pennsylvania Northern & Pittsburgh, and Clarion and Northern railroads have been merged into the Lake Erie, Franklin & Clarion R.R. The roads in the merger are in Venango and Clarion counties and traverse important coal lands.

Eaton Rapids, Mich.—Coal in paying quantities has been unearthed by the digging of a well on a 600-acre tract of land between this city and Albion. A mine has been in operation upon this tract for some time, but the drilling of this well revealed the presence of another deposit of coal which is said to be 4 ft. in thickness.

Washington, D. C.—The beehive type of coke oven which does not admit of the recovery of by-products from the distillation, according to the Department of Agriculture is responsible for an annual waste in the United States of \$22,000,000. About \$4,000,000 worth of ammonia is obtained annually as a by-product of coke making, while more than five times that amount is allowed to go to waste.

Washington, Penn.—As the result of a coal deal recently closed it is expected that Owen Murphy a coal operator of Latrobe will shortly open a coal mine in Coon Island in southwestern Washington Co. It is alleged that Mr. Murphy has come into possession of approximately 400 acres of coal and has options on two pieces of surface just outside the town, on one of which the shaft is to be sunk.

Seattle, Wash.—Eight hundred and forty miners employed in the Black Diamond mines of the Pacific Coast Coal Co. refused to work recently alleging that they were not properly safeguarded in the mines. The District Executive Board of the United Mine Workers of America upheld the action of the miners. If the allegations of the men are found to be correct, they will remain out until proper safeguards are installed.

Chicago, Ill.—A newly patented electrical primary battery, said to have been invented by a man in Washington, D. C., is being heralded in Chicago and other Illinois cities as "coming within 5 per cent. of perpetual motion." The salesmen openly affirm that when the invention is spread throughout the country, "the coal mines may as well shut up or down," for heat, light and power will be dispensed to stockholders at one-tenth the present cost.

Philadelphia, Penn.—The year 1913 proved one of the most prosperous in the general business of the port of Philadelphia, although the figures recently issued by collector Berry show a decline which, obtained on a limited number of products only. Bituminous coal one of the principal exports showed a substantial increase in volume and valuation over the year of 1912. During this time the exports amounted to \$2,378,299 as compared with \$2,590,954 for 1913.

Coal Trade Reviews

General Review

Hard coal still dull; colder weather and labor difficulty in New York Harbor have a stimulating local effect. Congestion of bituminous general at most of the distributing centers. Prices soft under adverse conditions, but showing a stubborn resistance on the decline.

Even under the combined influence of severe weather conditions, and an almost complete tie-up of water transportation in New York Harbor, the anthracite market has still failed to show the customary winter buoyancy. Tidewater demand is light at the best, and all companies are heavily stocked. The restricted production over the holidays has not relieved the situation, and unless there is a long continued spell of moderately severe weather, it may ultimately prove necessary to effect a further curtailment in the output.

Bituminous consumers are still carrying full stocks, and the congestion is noticeable everywhere. It is more difficult to negotiate business now than during last summer, but sellers are not, as a rule, attempting to force the market, appreciating the futility of adopting any such policy. The strike in New York Harbor has interfered with water deliveries and caused a congestion at some of the loading ports, but the situation has not developed to serious proportions as yet, and the rail movement continues in good volume. There has been an excess accumulation at the Hampton Roads piers, and as a consequence, there is a superabundance of the Southern fuels in the New England markets, which has caused a sharp break in the Pennsylvania grades.

The long continued mild weather in Ohio, together with the slowing down in manufacturing over the holidays, resulted in a further slump in the market there; stocks are heavy, and consumers are loath to place further orders until these can be moved. Business at Hampton Roads is only fair, few spot sales being negotiated; the bunker prices for 1914 were announced Jan. 1 on the same basis as last year. Colder weather in the South has created a more active situation there, and stocks are somewhat reduced. Steam coal is quiet, but with an excellent undertone; car situation much improved. A deficiency in the supplies of fuel oil at New Orleans has caused an unusual activity in the coal markets.

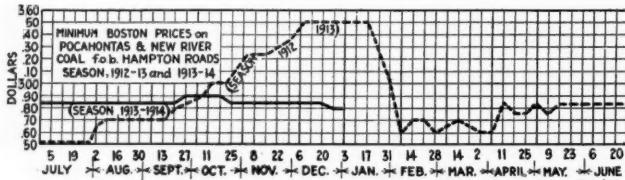
A more optimistic tone pervades the Middle Western market as a result of the colder weather. There is an increased demand, and while prices have not advanced as yet, there is a strong inclination toward higher levels. The manufacturing demand is getting under way again after the holiday cessation, and there is greater activity in retail circles, though this has not been felt in the wholesale end as yet.

EASTERN MARKET

BOSTON, MASS.

Bituminous market shows no material change. Still a large accumulation of New River and Pocahontas at Hampton Roads. Pennsylvania are largely affected by the abundance of Southern coals. Anthracite has yet to show the brisker movement expected on account of the present cold snap.

Bituminous—The market continues generally inactive. There is still an accumulation of coal at Hampton Roads in excess of chartered tonnage and though as yet the circular f.o.b. price of \$2.85 for New River and Pocahontas has been



fairly well maintained, several instances of shading have been reported. The New England market is so well stocked that it will probably be several weeks before this present cold weather has any effect. Pennsylvanias for tidewater

shipments have become considerably weaker owing to the superabundance of Southern coals. Georges Creek remains in good supply with a firm price. Contract demand in all quarters is slight.

The market continues quotable as follows:

| | Clearfields | Cambrias | Georges | Pocahontas | New River |
|----------------|-------------|-------------|-------------|-------------|-----------|
| Mines* | \$1.00@1.55 | \$1.25@1.60 | \$1.67@1.77 | | |
| Philadelphia* | 2.25@2.75 | 2.50@2.85 | 2.92@3.02 | | |
| New York* | 2.55@3.05 | 2.80@3.15 | 3.22@3.32 | | |
| Baltimore* | | | | 2.80@2.90 | |
| Hampton Roads* | | | | \$2.80@2.90 | |
| Boston* | | | | 3.72@3.82 | |
| Providence* | | | | 3.72@3.87 | |

*F.o.b. fOn cars.

Anthracite—This market remains listless, its only feature being the scarcity of stove coal. It is hoped that the present cold weather will soon produce a brisker demand but as yet the effect has been negligible. Freight rates are still 70@-75c. Hampton Roads to Boston, but a strike of the captains in New York Harbor is bound to have an early effect.

NEW YORK

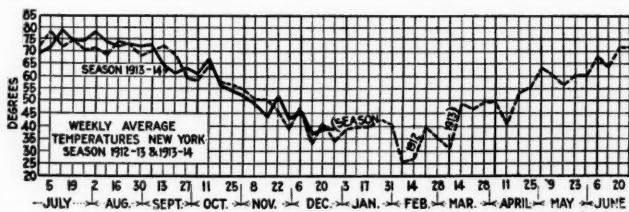
Strike of the barge captains in New York Harbor the feature of the local market. Conditions easy as yet due to large stocks of all kinds. Colder weather having a stimulating effect.

Bituminous—The strike of the boat captains has held up deliveries of coal to a considerable extent, and to prevent a congestion at South Amboy Piers, the Pennsylvania Railroad placed an embargo, the latter part of last week, on shipments to that point. Should the strike continue for any length of time, the other roads will undoubtedly find it necessary to take similar action. Ordinarily, such a situation at New York might force the coal into other channels, but mining operations have been somewhat curtailed this week by the severe weather conditions in the several regions. With the exception of those plants which have little or no storage capacity, the interruption to deliveries in New York Harbor is not likely to be serious.

Coal continues to move freely to consumers reached via all-rail, and a prolonged suspension of deliveries by rail and water would undoubtedly compel some water consignees to take their coal in via the rail routes.

The market continues quotable as follows:

West Virginia steam, \$2.60@2.75; fair grades of Pennsylvania, \$2.70@2.80; good grades of Pennsylvania, \$2.80@2.90; best Miller Pennsylvania, \$3.10@3.20; George's Creek, \$3.15@3.25.



Anthracite—Even with the suspension of mining due to the holiday season, there has been little noticeable improvement in the demand for prepared sizes. Most of the cheap egg coal which has been offering in the market for the past month or so has practically disappeared; this size seems to be moving along fairly well now with the stove and chestnut at, or about, circular prices. During the past week, however, pea coal was quite short in the local market as well as the better grades of buckwheat, while the poorer grades are still offering at a discount.

The strike of the boat captains, Jan. 2, has not up to this writing seriously handicapped the movement of coal since the stocks in the hands of the retailers were good. The shipments to tidewater have been light for the past week and the failure to move boats on account of the strike has not seriously effected the docks. It is not generally thought that the strike will be of long duration. The captains, of course, live on the boats and in striking they deprive themselves of a home. This together with the fact that they have in most cases very little money to carry themselves along during this inclement weather should lead to a speedy settlement.

We quote the New York market on the following basis:

| | Upper Ports | | Lower Ports | |
|----------------|-------------|-------------|-------------|-------------|
| | Circular | Individual | Circular | Individual |
| Broken..... | \$5.00 | | \$5.05 | |
| Egg..... | 5.25 | \$5.15@5.25 | 5.30 | \$5.10@5.20 |
| Stove..... | 5.25 | 5.25 | 5.30 | 5.20 |
| Chestnut..... | 5.50 | 5.50 | 5.55 | 5.35@5.45 |
| Pea..... | 3.50 | 3.50 | 3.50 | 3.35@3.45 |
| Buckwheat..... | 2.75 | 3.50 | 2.70@3.45 | 2.25@2.70 |
| Rice..... | 2.25 | 2.25 | 1.95@2.20 | 1.75@2.20 |
| Barley..... | 1.75 | 1.70@1.75 | 1.70 | 1.40@1.70 |

PHILADELPHIA

General restriction of production continues and market remains apathetic. New year holds little promise for operator and retailer. Demand exceedingly light.

The year 1913 closed with the lightest demand for hard coal in months, and little hope is entertained for relief. The new year was eagerly looked forward to by operators and dealers, but at the present time it hardly seems probable that the market will harden until seasonable weather arrives.

Business has sagged and everyone is anxiously waiting for it to recover. A general restriction of production continues, and it has been a long time since the local market was so dead. Two years ago the trade had a similar experience, and it was late in February before it started to show its real form. Reports from the mines state that individual operators are mining full time, but that they are compelled to make concessions in prices on every size in order to move their product. It is evident that the anthracite supplies are fully adequate, but the demand cannot be found as yet.

The bituminous market remains unsatisfactory. Prices for good coals continue to show resistance against any further decline, and persistently hold around the same level. Some poorer grades have eased off since the holidays. The production is being sharply curtailed partly by voluntary action on the part of the operators and partly as a result of the holidays.

BALTIMORE, MD.

The year is started with more winter-like weather, but with the trade still rather flat. Plenty of fuel on hand despite the holiday period. Anthracite conditions brisker. Coal exports break record.

Wintery weather conditions have marked the first week of the New Year, and while a continuance is likely to result in a stiffening of the coal trade as a whole, business just now is flat. The bituminous call remains remarkably poor for the season, most consumers reporting that they are loaded up to such an extent that they can take no more coal for a time. In West Virginia the steam coals of medium grade are still commanding around 90c., while gas coals range from 65c. for slack to around 85c. for three-quarter. The Pennsylvania coals show no marked change, first grades still calling for about \$1.25 and other classes selling down to 90 cents.

There is plenty of fuel on hand despite the holiday period. Nearly all mining interests were making reasonable offerings to the trade to keep fuel moving and to prevent congestion at the loading points.

Anthracite conditions showed an improvement. Much interest is being taken in the trade in a move under way to consolidate about twenty of the largest retail concerns here, much on the plan pursued some time ago in both Philadelphia and New York.

The coal exports from Baltimore for 1913 broke the record. In 1912 the total exports was 628,522 tons, while the past year saw a foreign movement from this port of 870,751 tons.

CENTRAL STATES

PITTSBURGH, PENN.

Production greatly curtailed in past fortnight. Demand light and weather unseasonable. Prices being cut somewhat. Connellsburg coke market less active. Rumors of dissensions among leading operators.

Bituminous—There has been only about one week of operation in the fortnight, on account of the holidays, and as some mines were closed altogether before the holidays, production has been light. Consumption has also been small and prospects are not good in this respect, manufacturing demand being poor while the weather on the whole is unseasonably warm. Not much prompt coal is moving and there has been little contracting for the three months, while annual contracts are few as they would extend over the wage settlement and on account of the uncertainties such contracts are avoided equally by buyers and sellers. Relatively

little prompt coal is moving, and there is some cutting. Regular prices, which are usually quoted, remain as follows: Slack, 90c.; nut and slack, \$1.05; nut, \$1.25; mine-run, \$1.30; $\frac{3}{4}$ -in., \$1.40; $1\frac{1}{4}$ -in. steam, \$1.50; $1\frac{1}{4}$ -in. domestic, \$1.55, per ton at mine, Pittsburgh district.

Connellsville Coke—Contracting for furnace coke for the new year has not been pursued with any avidity in the past few days, or since contracts for 125,000 to 150,000 tons a month were made about a week ago, at from \$1.85 to \$1.95. It is claimed that the regular asking price of \$2 has been paid in two or three instances, but chiefly for January tonnages only. Rumors are numerous that there is trouble among the companies which have been selling, or perhaps more accurately speaking holding their product for sale, through the Producers Coke Co. One rumor has it that several companies are withdrawing while another is to the effect that the company will reduce its asking price. This might avail little, seeing that there is not much more coke to be covered.

Prompt furnace coke is quiet, but unquestionably higher. Corrigan, McKinney & Co. have blown out two of their five stacks and have bought 8000 tons of prompt coke at \$1.75, intending to run their three furnaces a short time longer. We quote: Prompt furnace, \$1.90@1.95; contract furnace, \$1.85@2; prompt foundry, \$2.40@2.65; contract foundry, \$2.40@2.65, per ton at ovens.

The "Courier" reports productions in the Connellsburg and lower Connellsburg region in the week ending Dec. 27 at 236,085 tons, a decrease of 48,851 tons, and shipments at 233,581 tons, a decrease of 44,774 tons.

BUFFALO, N. Y.

Still a quiet market. Dealers do not look for much recovery this month. Coal on track and business in retail centers heavy. Preparations for the spring suspension.

Bituminous—There is still much difficulty in getting the surplus supply out of the way. Jobbers are holding back the production as much as possible, and the result is a lot of cars standing on track on demurrage. It is the good salesman and careful manager who is making money out of the business now.

Coal will not sell half as readily now as it would last July. The retailer and the consumer are so loaded up with stock, that neither of them is able to take any more while actual consumption has gone off somewhat and the congestion is noticeable everywhere. Even if the consumption increases it is estimated that a month will be needed to make any headway against the oversupply and it may even take a big spring suspension of the mines to wipe out the surplus. The spring suspension is fully expected to take place, though it may not be long. The miners are well supplied with funds so that it may turn on how soon the operators wish to get back to business or on the effort of some district attempting to get started ahead of another. Such has been the situation in former years. Coal sellers are not trying to push the market very hard appreciating the futility of such an action. The consumer is not afraid of running out of stock and treats the talk of a spring strike with contempt. Bituminous prices are unsteady and do not rule above \$2.80 for Pittsburgh lump, \$2.70 for three-quarter, \$2.25 for mine-run and \$2.15 for slack, with slack doing a little better than sizes. Allegheny Valley coal follows Pittsburgh closely, but on account of the lower freight rate in this market it sells for about 25c. less.

Coke—The demand for coke is still light and the small promise last week of a firmer market soon does not appear to have been realized. Dealers do not agree as to the outlook; some believe a generally better state of trade will compel a revival of the iron trade. Coke quotations remain weak at \$4.60 for best Connellsburg foundry.

Anthracite—The late winter snow has not brought about any larger demand as yet. In fact many of the mines, including the independents, are running on only part time and with coal on demurrage at various points, the anthracite trade is not without its difficulties. There begins to be fear that the big supply shipped West by Lake will not all be required this winter.

One company has a large amount of coal on hand here and is loading into lake vessels. The amount put afloat so far is more than 40,000 tons, with prospects of a continuation. As a rule the other companies do not appear to be anxious to tie up their coal in that way and there are certainly two sides to the question. A long spring suspension of mining tied up the anthracite trade West very badly two years ago, which a good amount afloat here would have prevented.

TORONTO, CAN.

Colder weather created some activity in anthracite. A projected municipal coal yard.

Trade showed considerable improvement during the past

week owing to the setting in of cold weather; anthracite for domestic purposes is moving freely, many having allowed their supplies to become low so long as mild weather lasted. An active business for January is anticipated. Quotations remain unchanged.

The City Council of Toronto, in pursuance of a project for the establishment of municipal coal yards, which has been advocated from time to time, has applied to the Provincial Legislature for an amendment to the civic charter to enable them to engage in the coal business. The dealers do not consider that there is much likelihood of its adoption.

COLUMBUS, OHIO

Combination of adverse factors in the local trade. Continuation of mild weather and the closing down of many manufacturing plants caused very quiet trade. Movement small in every line and prices again slumped in spite of the efforts of the larger operators and jobbers to maintain the circular.

Production was at a low point during last week. Because of the holiday, which always means a cessation of work and little demand for steam and domestic grades, the output in the various mining districts was small. In the Hocking Valley the production was about 35 per cent. of the average and the same is true of eastern Ohio and Pomeroy Bend. In the domestic fields of Jackson, Massillon and Cambridge the output was even less.

Domestic trade is dead in every way. Dealers stocks are large and they are loath to place orders until they are able to move what they have. The larger householders have laid in their supply for the winter and the domestic trade is now largely a weather proposition. Orders placed for delivery in January have either been canceled or deferred. Collections are bad as a result of the inability of dealers to move their stocks.

There is more doing in steam lines but even this department is feeling the effects of the holiday vacation and the business depression. Many plants which have shut down temporarily have not yet started while others are on part time. Their fuel consumption is not at all large. The movement on the part of some steam users to stock up against a possible suspension after Apr. 1, has not caused much effect on the trade. Contracts are being renewed on the same basis that prevailed during the past year. There is practically nothing doing in retail circles. Dealers are not busy and many of their wagons have not been out for several days.

Quotations in the Ohio fields are as follows:

| | Hocking | Pittsburgh | Pomeroy | Kanawha |
|-------------------------|---------------|---------------|---------------|-------------|
| Domestic lump..... | \$1.75 @ 1.70 | \$1.90 @ 1.80 | \$1.70 @ 1.60 | |
| 3-4 inch..... | 1.50 @ 1.45 | \$1.20 @ 1.15 | 1.60 @ 1.40 | 1.50 @ 1.45 |
| Nut..... | 1.30 @ 1.25 | | 1.50 @ 1.40 | 1.30 @ 1.25 |
| Mine-run..... | 1.30 @ 1.25 | 1.10 @ 1.05 | 1.30 @ 1.25 | 1.30 @ 1.25 |
| Nut, pea and slack..... | 0.80 @ 0.75 | | 0.90 @ 0.85 | 0.80 @ 0.75 |
| Conc. slack..... | 0.70 @ 0.65 | 0.90 @ 0.85 | 0.80 @ 0.75 | 0.70 @ 0.65 |

DETROIT, MICH.

The long period of mild weather has caused a general heaviness in the market. Railroad yards congested with coal.

Bituminous—The unusually mild weather has caused a falling off in the local trade and it is now entirely a weather market. The railroad yards are crowded with coal, and with shipments still coming in there is considerable forced selling to avoid demurrage. The domestic business is suffering the worst as would be expected. Stocks generally appear to be large, and with consumption light there is little or no excuse for any business.

Steam trade is adversely affected by the slowing down in business. Cancellations and hold-over orders are reported on all sides. Railroads are giving an almost perfect service. Operators have exhausted practically every effort to maintain prices which are now weak. Domestic lump is quoted at \$1.35, the regular circular being \$1.75 @ 1.85. While three-quarter lump is quoted at \$1.60 the mines, it can be obtained apparently in any quantities at \$1.10 in Detroit.

The market is quotable on the following basis:

| W. Va. | Gas | Hock- ing | Cam- bridge | No. 8 | Poca- hontas | Jackson Hill |
|--------------------|--------|--------------|----------------|--------|-----------------|-----------------|
| Domestic lump..... | \$1.45 | .... | \$1.50 | .... | \$2.40 | \$2.25 |
| Egg..... | 1.45 | .... | 1.50 | .... | 2.40 | 2.25 |
| Nut..... | 1.20 | .... | 1.10 | .... | .... | .... |
| Steam lump..... | 1.20 | .... | .... | .... | .... | .... |
| 3-4 in. lump..... | 1.10 | \$1.10 | 1.10 | \$1.10 | .... | .... |
| Mine-run..... | 1.00 | 1.00 | 1.00 | 1.00 | 1.25 | .... |
| Slack..... | 0.75 | 0.80 | 0.60 | 0.65 | 0.65 | .... |

Anthracite—Hard coal is in light demand, business negotiated being about the same as occurs in a normal summer market. The circular is being freely shaded as much as 50c. in some instances, and there is considerable coal unsold.

Coke—Coke is in practically no demand at all. Connerville is quoted at \$1.75, with Semet Solvay at \$2.85 and gas

house \$2.65 f.o.b. ovens. Local ovens have suspended operations indefinitely.

HAMPTON ROADS, VA.

Dumpings for the week fair. About normal accumulation at tidewater, total shipments for December over one million tons.

The movement from Hampton Roads during the past week has been only fair. The demand has not been so heavy owing no doubt to the holiday season and such shipments as have moved were mostly on contract business. Very little spot coal was sold during the week, and those made covered only small parcels. Bunker prices for 1914 went into effect on the first, the contract figures being the same as for 1913. In addition to coastwise shipments, principally to New England, coal has moved during the week to Coronel, Vera Cruz, Naples, St. Louis and Cristobal.

During the month of December the Norfolk & Western dumped over their piers at Lamberts Point 514,020 tons, The Virginian Ry. at Sewalls Point 267,632 tons and the Chesapeake & Ohio Ry. at Newport News, 274,734 tons. These figures show a considerable falling off in the Virginian Ry. tonnage as compared with their previous month's dumpings. The total dumpings over the three Hampton Roads terminals for 1913 amounted to 11,993,658 tons. This is the greatest amount of coal ever shipped in any one year from Virginian Tidewater, the dumpings for 1912 being a close second with 11,437,987 tons.

LOUISVILLE, KY.

Advent of winter weather stimulated buying. Curtailment over holidays created a mild shortage. Prices more buoyant.

The most disagreeable weather of the year resulted in an immediate improvement of the coal market in this section, the increased demand with the retailers being reflected at once in orders upon the wholesalers and operators. This improved demand, coupled with the usual holiday lay-off resulted in something like a shortage. Most of the available fuel on tracks was eagerly snapped up in the early part of the week, at increased prices, as compared with those prevailing a short time ago. It is apparent that stocks laid in early in the season are about exhausted and with a heavy consumption an equally steady demand is certain.

The steam market is in equally good shape; as yet the short supply available last week has not been considerably improved, owing largely to the same conditions as prevail in the domestic market. In consequence almost anything in the shape of screenings has sold readily, the lower grades being freely placed where usually only first-class Eastern Kentucky coals have been acceptable. This will probably ease up considerably with the increased production of the prepared grades, but there should be a good demand, sufficient to take care of a large and steady supply, for the remainder of the winter. The car supply has been adequate for the comparatively slight output at the mines during the holiday season; whether it will continue so when full operations are resumed is a question with the mine owners.

Prices for delivery this month are quoted at \$2.15 for the better grades of Eastern Kentucky block, \$1.85 for block and lump, and \$1.55 for round, with nut and slack in active demand at 85 to 95c. Western Kentucky is in fairly good call at \$1.25 for block, with some sales a little higher, and 65 to 75c. a ton for nut and slack.

SOUTHERN AND MIDDLE-WESTERN

BIRMINGHAM, ALA.

Cold weather for the last few days has had a stimulating effect on lump coal. Steam grades quiet. Blacksmith coal in satisfactory condition. Furnace and foundry coke dull. Pig iron more active.

For the past few days freezing weather has had rather a stimulating effect on lump coal, and while the operators have not yet reaped any benefit, the accumulated stocks in dealers' hands and in railroad yards have been greatly depleted. A week more of cold weather will bring about a decided change for the better in lump coal; the present market is still quiet, but with a more cheerful outlook.

Steam coal shows little change over last week. The output is really in excess of the demand, as all of the mines have resumed operations since the Christmas holidays. The operators are feeling more optimistic, however, over the prospects for a good business. Blacksmith coal is normal, the

tonnage handled being about the average for this season. Both furnace and foundry coke are still quiet, with no immediate prospects of improvement. Pig iron was considerably more active this week, a good tonnage being booked by the Birmingham manufacturers. Buying for the first quarter and half of 1914 has started, and the furnaces are expecting a most favorable year. Prices are firm at \$11 f.o.b. Birmingham for 2 Foundry. The car situation has improved within the last week or ten days, due partly to the mines being closed down over the holidays.

NEW ORLEANS

Parcel shipments to Mexico and Central American points heavy. Honduras principal buyer. East Texas and west Louisiana taking more than usual. Alabama coal reaches New Orleans by water route.

Heavy parcel shipments of coal to Mexico and Central American points was the only feature in the coal market here last week. Honduras was the largest buyer. Numerous shipments were made to Costa Rica and Guatemala. Colder weather made the city demand heavy although total sales in the city are fully 30% under normal, thus far this winter.

Shipment of coal to points along the Southern Pacific Railroad and Louisiana and east Texas are much heavier than usual at this time of the year. This is due entirely to the fact that the strike six weeks ago has cut off fuel oil shipments. The dealers are buying now in a hand-to-mouth manner, so as to be able to supply their trade, but without stocking up for more than their requirements.

Two barge loads of coal have arrived from Alabama fields. These trips have not been satisfactory owing to the low stage of the Warrior and Tombigbee rivers. It is probable that no future attempts to bring coal on barges will be made until the government locks in the upper rivers have been completed. This means that the prevailing prices will continue in effect for at least a year. Introduction of water transported coal threatens to lop 50c. off the prevailing quotations.

INDIANAPOLIS

No change in trade conditions or prices. Some operators, tired of waiting for winter weather, are reported making concessions. Signs of improvement in factory demand.

January is usually a good month for the coal business but so far it gives no evidence of living up to its past reputation. However there is a light mantle of snow over most of the state and this has been a stimulant. As stocks are ample, the increased demand has not yet reached operators and mines continue to work on short schedule where they are not entirely closed down. This condition is not likely to last as retailers will soon be in the market again, unless the winter breaks the record for mildness. The less optimistic producers are reported to be shading prices, to catch such emergency orders as are available and to induce those who have made holes in their stocks to fill them up again at a bargain.

While it has been comparatively easy to get \$1.90 to \$2 for domestic lump, orders are now being booked mostly below these figures, perhaps around \$1.80, while some sales are even reported 20 to 30c. below this. Operators point out, however, that there is considerable difference in the quality, and that the best domestic lump is still worth \$1.90 to \$2; and further that it is being sold at that figure. Mine-run has a range of \$1.10 to \$1.20 and screenings 60 to 75c. The factory demand shows signs of improvement as there is considerable preparation for getting operations back to normal again. Car shortage has been eliminated by the general slackening of operations.

Retail prices in this city still stand at the only advance made since spring, which went in effect Sept. 20. Fortunately for the yards, this raise was almost to the usual high mark for winter and was caused by the fear of not being able to get a sufficient supply of coal on account of the car shortage in September and October. Anthracite sells at \$7.75@\$8.50, according to grade; Pocahontas at \$5@\$6.50; Eastern bituminous, \$4.75@\$5.50; Indiana lump, \$3.50; Brazil block, \$4.25 and coke, \$6.50.

ST. LOUIS, MO.

Colder weather has appeared and there is a generally more optimistic tone. Steam coal in good demand.

Colder weather has brought about somewhat better conditions, and the trade seems to have an optimistic view of future conditions. While the weather has brought some demand, it has not been sufficient to make much change in prices, although there is an inclination that way.

Steam coal is in good demand, and the price of screenings is getting back to where it was last spring and summer. Carterville and Franklin County are hovering around 80c. at the mines, while Standard screenings are in good demand at 55@60c. The smaller sizes of washed coal are hard to get at any

price, while the domestic grades are not moving. The better coals from the high grade field are still holding up at good prices, but there is always some tonnage of inferior coal that is under demurrage and taking whatever the market will bring. There is some demand for anthracite and a little call for smokeless, but the coke market is heavy.

The prevailing market is:

| | Carterville and Franklin Co. | Big Muddy | Mt. Olive | Standard |
|-----------------------|------------------------------------|--------------|--------------|-------------|
| 2-in. lump..... | | | | \$0.90@1.00 |
| 3-in. lump..... | \$1.25 @ 1.50 | \$2.25 | 1.50 | 1.15@1.25 |
| 6-in. lump..... | 1.85 @ 2.15 | | | |
| Lump and egg..... | 1.15 @ 1.40 | | | |
| No. 1 nut..... | 0.75 @ 0.80 | | | |
| Screenings..... | 1.10 @ 1.20 | | | |
| Mine-run..... | 1.60 @ 1.75 | 2.25 | 1.60 | |
| No. 1 washed nut..... | 1.25 @ 1.35 | | 1.25 | |
| No. 2 washed nut..... | 1.15 | | | |
| No. 3 washed nut..... | 1.05 | | | |
| No. 4 washed nut..... | 0.50 | | | |
| No. 5 washed nut..... | | | | |

KANSAS CITY, MO.

Outlook much improved with the colder weather. Stocks being diminished and orders are more plentiful. Production increased.

The coldest weather of the season has prevailed in Kansas and Missouri during the past two weeks, and coal operators are more optimistic than for some time past. While dealers are not yet ordering heavily, their stocks are being diminished rapidly and the prospects are considered excellent. Many business houses which ordered as lightly as possible before their annual inventories, are now anticipating their requirements thirty or forty days.

The market, which has been weak for some time past, is showing more strength, and operators are more inclined to stand by their quotations. Most of the mines in Kansas and Missouri have taken a brace, as far as output is concerned, and are now working from one-half to two-thirds time. If the weather continues favorable, many of the mines will be worked to capacity during the next week.

PRODUCTION AND TRANSPORTATION STATISTICS

NORFOLK & WESTERN

The following is a statement of the tonnage shipped over this road during November, 1913, and the first eleven months, as compared with corresponding periods of 1912 in short tons:

| Coal | November | | Eleven Months | |
|---------------------------|-----------|-----------|---------------|------------|
| | 1912 | 1913 | 1912 | 1913 |
| Tidewater, foreign..... | 83,877 | 50,154 | 1,259,228 | 1,392,064 |
| Tidewater, coastwise..... | 239,476 | 269,169 | 3,325,067 | 3,474,018 |
| Domestic..... | 1,573,454 | 1,707,475 | 16,361,386 | 17,190,564 |
| <i>Coke</i> | | | | |
| Tidewater, foreign..... | 136,912 | 117,791 | 52,762 | 30,507 |
| Domestic..... | 136,912 | 117,791 | 1,282,093 | 1,382,572 |
| Total..... | 2,033,719 | 2,144,605 | 22,280,536 | 23,469,725 |

IMPORTS AND EXPORTS

The following is a comparative statement of imports and exports in the United States for October, 1912-13, and for the ten months ending October, 1911-12-13, in long tons:

| Imports from: | 10 Months | | | October | |
|-----------------------------|------------|------------|------------|-----------|-----------|
| | 1911 | 1912 | 1913 | 1912 | 1913 |
| United Kingdom..... | 7,418 | 4,864 | 5,250 | 802 | 662 |
| Canada..... | 817,081 | 1,169,702 | 897,489 | 119,308 | 69,476 |
| Japan..... | 9,271 | 20,718 | 89,115 | 490 | 10,040 |
| Australia and Tasmania..... | 164,623 | 140,502 | 141,578 | 31,577 | 20,192 |
| Other countries..... | 355 | 2,105 | 3,296 | 80 | 480 |
| Total..... | 998,753 | 1,837,891 | 1,136,737 | 152,257 | 100,850 |
| <i>Exports:</i> | | | | | |
| Anthracite..... | 3,016,127 | 3,032,691 | 3,598,343 | 431,060 | 425,341 |
| Bituminous, | | | | | |
| Canada..... | 8,933,044 | 8,907,968 | 11,662,469 | 1,141,770 | 1,378,471 |
| Panama..... | 417,476 | 396,227 | 419,680 | 33,950 | 32,098 |
| Mexico..... | 418,479 | 256,657 | 417,262 | 17,255 | 19,509 |
| Cuba..... | 853,834 | 943,262 | 1,111,573 | 91,873 | 128,181 |
| West Indies..... | 447,357 | 563,948 | 524,260 | 57,324 | 59,615 |
| Argentina..... | ..... | 61,877 | ..... | ..... | 6,000 |
| Brazil..... | ..... | 241,099 | ..... | ..... | 30,054 |
| Uruguay..... | ..... | 5,163 | ..... | ..... | ..... |
| Other countries..... | 573,733 | 1,237,714 | 1,100,273 | 70,111 | 95,765 |
| Total..... | 11,643,931 | 12,395,776 | 15,543,656 | 1,412,483 | 1,749,693 |
| Bunker coal..... | 5,583,497 | 6,151,280 | 6,483,020 | 655,561 | 719,436 |

Financial Department

Virginia Iron, Coal & Coke Co.

President John B. Newton reports in part, for the year ending June 30, 1913, as follows:

Results—Although the year 1912-13 started out full of encouragement, the demand for iron had by Dec. 31 fallen off, prices dropping until in May 1913 the low level of 1911 was reached. The market remained through June and July; today, while it is by no means strong, there is a better feeling and indications point to more demand and better prices. During the few months of active market we booked sales of 230,000 tons of iron, at fairly remunerative prices.

The blast furnaces at Radford and Roanoke were operated continuously and the Pulaski furnace for six months of the year, producing a total of 130,435 tons of coke iron, while the charcoal furnace at Foster Falls turned out 2912 tons of cold-blast charcoal iron. On June 30, 1912, we had 163,826 tons of pig iron on hand; on June 30, 1913, only 60,000 tons, we having shipped from current make and out of stock a total of 237,608.

Our coal business has continued to grow, both in volume and profit. The mines produced 1,840,213 tons, at a profit of \$353,655, as against 1,563,284 tons at a profit of \$309,419 the preceding year. At Toms Creek (your largest operation) the most modern all-steel tipple obtainable should be completed by Oct. 1 of this year, substantially increasing production.

Exchange of Coal Lands—We have concluded negotiations with the Clinchfield Coal Corporation for the exchange of certain interlocking coal lands in Wise County, Va., making it practicable to mine the maximum amount of coal with the least possible waste.

Bonds—We have retired by purchase \$21,000 additional of our first M. bonds, costing \$19,959, and 21 Carter Co. bonds, costing \$22,143.

Financial—We have been able, through the reduction in our stock of pig iron, to reduce bills payable \$764,000 and increase our sales ledger balances \$398,589 and our bills receivable \$57,000, and in addition to purchase from the Inter-State Coal & Iron Co. for \$187,500 the coal property, in fee simple, formerly covered by our Inman lease, and known as Inman mines. We purchased during the year new equipment amounting to \$60,000 and real estate amounting to \$30,000.

Purchase—The Inman purchase was of especial importance to us since during the lease we had expended over \$200,000 in the construction of 175 coke ovens, 179 dwelling houses for miners, storehouses, etc., all of which would have had to be removed or disposed of on the expiration of the lease. The property still contains from 3,000,000 to 4,000,000 tons of minable coal, upon which, under the lease, we would have had to pay 10c. per ton royalty as same was mined. Now that we own this property, we confidently expect to save enough royalty on coal mined to pay the interest and principal on the purchase price, leaving the improvements available for use at our adjoining Linden mines.

Depreciation—The plants and equipment have been fully maintained, there having been charged against operating expenses for depreciation of plants, equipment, ore lands and coal lands, a total of \$318,292, while additions and permanent improvements aggregated \$149,503.

INCOME ACCOUNT

| | 1912-13 | 1911-12 | 1910-11 | 1909-10 |
|-------------------------------|-----------|-----------|-----------|-----------|
| Net earnings from oper... | \$581,830 | \$278,517 | \$336,235 | \$517,879 |
| Farms and farm rentals... | 16,145 | 9,822 | 6,187 | 7,856 |
| Misc., mdse., dis., etc... | 18,922 | 23,820 | 29,318 | 33,147 |
| Total net income..... | \$616,897 | \$312,150 | \$371,740 | \$558,882 |
| Deductions— | | | | |
| Taxes..... | \$57,337 | \$57,060 | \$50,500 | \$49,280 |
| Bond interest..... | 262,688 | 264,513 | 265,638 | 267,082 |
| Insurance..... | 28,191 | 23,792 | 22,348 | 19,602 |
| Expenses of idle plants..... | 71,439 | 65,490 | 51,758 | 151,202 |
| Deprec'n of idle plants..... | 126,359 | { 91,155 | 60,691 | ... |
| Depr'n of active plants..... | | 29,048 | 53,594 | 65,270 |
| Interest and discount..... | 103,160 | 112,809 | 90,519 | 73,146 |
| Dead rents and contracts..... | 2,674 | 13,111 | 14,190 | 39,457 |
| Miscellaneous..... | 302 | 168 | 245 | 399 |
| Development..... | 2,838 | 28,044 | 25,044 | 23,371 |
| Total deductions..... | \$654,988 | \$685,199 | \$634,527 | \$688,809 |
| Loss for the year..... | \$38,091 | 373,787 | 262,787 | 129,927 |

Operating accounts were charged during the year with \$318,292 for depreciation, viz.; Depreciation of coal lands, \$100,708; deprec. of ore lands, \$3,749; deprec. of impts. to leased properties, \$62,772; deprec. of impts. to owned properties, \$151,064; also with furnace repairs, \$33,347.

There was spent \$149,503 during the year for improvements to owned and leased properties, viz., impts. to owned properties, \$126,792; impts. to leased properties, \$22,712; repairs to furnaces, \$109,855.

BALANCE SHEET JUNE 30

| Assets | 1913 | 1912 | Liabilities | 1913 | 1912 |
|--------------------------|--------------|--------------|--------------------------|--------------|--------------|
| Real est. and plant..... | \$12,595,009 | \$12,632,985 | Capital stock. | \$10,000,000 | \$10,000,000 |
| Equipment..... | 411,147 | 352,114 | First m'tge. bonds..... | 4,835,000 | 4,856,000 |
| Sec. owned..... | 197,363 | 230,663 | Prior lien bonds..... | 398,000 | 419,000 |
| Sales ledger bal..... | 747,169 | 348,580 | Unpaid a/c vouchers..... | 251,806 | 219,162 |
| Bills rec'dable..... | 104,142 | 43,862 | Unpaid pay-rolls..... | 89,132 | 69,503 |
| Cash..... | 57,346 | 167,456 | Accounts payable..... | 9,850 | 10,123 |
| Materials..... | 1,753,755 | 3,026,517 | Bills payable..... | 1,522,056 | 2,286,056 |
| Miscellaneous..... | 95,401 | 124,269 | Interest accrued..... | 85,292 | 86,104 |
| Profit and loss..... | 1,229,804 | 1,039,502 | Furnace - repair fd..... | ..... | 20,000 |
| Total..... | \$17,191,136 | \$17,965,948 | Total..... | \$17,191,436 | \$17,965,948 |

EARNINGS FOR YEAR ENDING JUNE 30

| Operation of | Year 1912-13 | | Year 1911-12 | |
|------------------|--------------|-----------|--------------|---------------|
| | Gross | Net | Gross | Net |
| Furnaces..... | \$1,986,679 | \$185,828 | \$1,019,840 | def. \$29,095 |
| Foundries..... | 102,555 | 1,182 | 70,591 | def. 11,670 |
| Coal mines..... | 1,616,465 | 353,655 | 1,378,802 | 308,419 |
| Coke ovens..... | 444,729 | 35,861 | 242,567 | 2,854 |
| Saw mills..... | 296 | 83 | 181,331 | 8,009 |
| Grist mills..... | 180,539 | 5,304 | 181,331 | 8,009 |
| Total..... | \$4,331,263 | \$581,830 | \$2,893,214 | \$278,517 |

COAL SECURITIES

The following table gives the range of various active coal securities and dividends announced during the week ending Jan. 3.

| Stocks | Week's Range | | | Year's Range* | |
|-------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| | High | Low | Last | High | Low |
| American Coal Products..... | 80 | 87 | 80 | 87 | 80 |
| American Coal Products Pref..... | ..... | ..... | ..... | 109 $\frac{1}{2}$ | 105 |
| Colorado Fuel & Iron..... | 29 | 27 $\frac{1}{2}$ | 28 $\frac{1}{2}$ | 41 $\frac{1}{2}$ | 24 $\frac{1}{2}$ |
| Colorado Fuel & Iron Pref..... | ..... | ..... | ..... | 155 | 150 |
| Consolidation Coal of Maryland..... | 190 | 175 | 175 | 102 $\frac{1}{2}$ | 102 $\frac{1}{2}$ |
| Lehigh Valley Coal Sales..... | 48 | 48 | 48 | 53 $\frac{1}{2}$ | 47 |
| Island Creek Coal Com..... | 85 | 83 $\frac{1}{2}$ | 85 | 85 | 80 |
| Pittsburgh Coal..... | 18 $\frac{1}{2}$ | 17 $\frac{1}{2}$ | 17 $\frac{1}{2}$ | 24 $\frac{1}{2}$ | 14 $\frac{1}{2}$ |
| Pittsburgh Coal Pref..... | 86 $\frac{1}{2}$ | 86 $\frac{1}{2}$ | 86 $\frac{1}{2}$ | 95 | 73 |
| Pond Creek..... | 19 | 18 $\frac{1}{2}$ | 18 $\frac{1}{2}$ | 23 $\frac{1}{2}$ | 16 $\frac{1}{2}$ |
| Reading..... | 170 $\frac{1}{2}$ | 166 $\frac{1}{2}$ | 167 $\frac{1}{2}$ | 171 | 151 $\frac{1}{2}$ |
| Reading 1st Pref..... | 88 | 87 $\frac{1}{2}$ | 88 | 92 $\frac{1}{2}$ | 82 $\frac{1}{2}$ |
| Reading 2nd Pref..... | ..... | ..... | ..... | 95 | 84 |
| Virginia Iron, Coal & Coke..... | ..... | ..... | ..... | 54 | 36 |

| Bonds | Closing | | Week's Range | | Year's Range* | |
|------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------------|
| | Bid | Asked | or Last Sale | High | Low | |
| Colo. F. & I. gen. s.f.g. 5s..... | 90 $\frac{1}{2}$ | 91 $\frac{1}{2}$ | 91 $\frac{1}{2}$ | Dec. '13 | 90 | 99 $\frac{1}{2}$ |
| Colo. F. & I. gen. 6s..... | 102 | 106 $\frac{1}{2}$ | 107 $\frac{1}{2}$ | June '12 | 75 | 85 |
| Col. Ind. 1st & coll. 5s gu..... | 78 | Sale | 78 | 78 | 75 | 85 |
| Conn. Ind. Coal Me. 1st 5s..... | 76 | 79 | 76 | Aug. '13 | 76 | 76 |
| Conn. Coal 1st and ref. 5s..... | ..... | 88 | 87 $\frac{1}{2}$ | Dec. '13 | 87 | 87 $\frac{1}{2}$ |
| Gr. Riv. Coal & C. 1st g 6s..... | ..... | 102 $\frac{1}{2}$ | 102 $\frac{1}{2}$ | April '06 | ..... | ..... |
| K. & H. C. & C. 1st s f g 5s..... | 92 $\frac{1}{2}$ | 92 $\frac{1}{2}$ | 92 $\frac{1}{2}$ | Dec. '13 | 91 | 98 |
| Pocah. Con. Coll. 1st s f 5s..... | ..... | 85 $\frac{1}{2}$ | 86 | Oct. '13 | 85 | 87 $\frac{1}{2}$ |
| St. L. Rky. Mt. & Pac. 1st 5s..... | 76 | 77 | 77 | 77 | 73 | 80 $\frac{1}{2}$ |
| Tenn. Coal gen. 5s..... | 97 $\frac{1}{2}$ | Sale | 97 $\frac{1}{2}$ | 97 $\frac{1}{2}$ | 96 | 103 |
| Birm. Div. 1st consol. 6s..... | 101 | 102 $\frac{1}{2}$ | 100 $\frac{1}{2}$ | 101 $\frac{1}{2}$ | 100 $\frac{1}{2}$ | 103 |
| Tenn. Div. 1st g 6s..... | 100 $\frac{1}{2}$ | 101 $\frac{1}{2}$ | 101 $\frac{1}{2}$ | Dec. '13 | 99 | 102 |
| Cash. C. M. Co. 1st g 6s..... | ..... | 103 | 103 | July '13 | 103 | 103 |
| Utah Fuel 1st s f 5s..... | ..... | 84 | 80 | May '13 | 79 $\frac{1}{2}$ | 80 |
| Victor Fuel 1st s f 5s..... | ..... | 92 $\frac{1}{2}$ | Sale | 92 $\frac{1}{2}$ | 92 $\frac{1}{2}$ | 98 |

*For the full year 1913.

DIVIDENDS

Central R.R. of New Jersey—Regular quarterly dividend of 2% payable Feb. 2 to holders of record Jan. 23, also an extra of 2% payable Dec. 30 to holders of record Dec. 24.

Delaware, Lackawanna & Western Coal—Regular quarterly dividend of 2½% payable Jan. 15 to holders of record Dec. 31.

22

The Bond County Coal Co. (Illinois)—This company has recently offered \$120,000 first mortgage, serial, 6% sinking fund, gold bonds. The total authorized issue is \$500,000, the balance above that now offered being reserved for the acquisition of additional coal lands at a rate not to exceed \$10 per acre.